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FLAX STRAW RECOVERY DURING COMBINING AND BALING

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Final Report

Flax Straw Recovery During Combining and Baling

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Table of Contents

		Page
1.	Summary	1
2.	Technical Report	2
	2.1 Introduction	2
	2.2 Goal Objectives	3
	2.3 General Description	3
	2.4 Scope of Test	6
	2.5 Results and Discussion	7
5.	Equipment	15
6.	Project Developed Materials	16
7.	Project Photos	17
8.	ICAR Data Entry	18
Appendix I	Metre Square Data	19
Appendix II	Combine Collection Results	24
Appendix III	Field Data	28
Appendix IV	Combine/Baler Data	32

1. Summary

This project set out to define a suitable method of predicting straw availability from flax crops based upon pre-harvest sampling. It also explored what effect harvesting and baling equipment and time of baling might have upon straw recovery.

It was found that straw-to-grain ratios, derived from m^2 sampling, were not consistent, and thus would not be suitable for accurately predicting available straw based on historic seed yield data. Errors could be substantial and as likely to provide an overestimate as an underestimate.

Simply measuring the material-other-than-grain (MOG) from m^2 samples had the potential of providing a reasonable estimate of straw availability. These results tended to slightly underestimate the amount recovered, which would provide a slight safety margin. The amount of sampling would be critical. Straw yield across a field varies greatly and a grid pattern of sampling would be necessary to obtain reasonably accurate numbers. Seed yield would not need to be measured.

The type of combine used to harvest and the type of baler used had little impact on straw recovery. Practical recovery rates compared to careful sampling should typically yield 85% or better. With less comprehensive sampling that could drop to 75%. This is less likely due to machinery efficiency than it is to the ability of samples to predict yields any more accurate than that level.

Some decrease in recovery efficiency could be expected as time after harvest increases. That amount, due to time alone, would in most instances be very small as compared to the loss that could be caused by erratic weather, which could occur anytime from harvest on.

One of the most important factors affecting straw availability is cut height. Decreasing cutting height from 20 to 10 cm showed the potential of increasing the straw yield by at least 50%.

The impact of crop moisture at the time of baling on recoverable straw was not clearly identified. Obviously straw moisture affects bale mass, but the effect on straw characteristics and behavioural effect on baling was undetermined. However, within the range of moisture that was encountered, the effect was negligible.

2. Technical Report

2.1 Introduction

Presently, reliable data is available about grain yields across Western Canada. This can be correlated to soil zones, rainfall, etc., which is useful to scientists, consultants, and others engaged in planning and developing models for supply, transportation requirements, and resource management, etc. However, there have been no comprehensive measurements done to link the grain yields to the amount of straw or chaff material produced by the rest of the plant and to straw that is recoverable through typical means. This is not to discount measurements made in various manners. Measurements have been made where the plants have been harvested at ground level, there have been measurements of material discharged from combines, and there have been measurements of the amount of straw harvested after combining. However, without having made all of these measurements in the same plots and relating them to grain yield and other plant characteristics, the data, in many cases, has seemed incomplete. As a result, depending upon which data was used, the conclusions have varied considerably.

In this project, all three types of measurements were conducted in the same field plots. They included small samples (1 m^2), medium size samples from combine collections, and larger baled samples of several windrows. These samples were taken in flax since it has an emerging importance as a potential source of biomass for use in paper production, as a glass fibre substitute, and in other industrial applications.

Data was also gathered to determine if the time after harvest affected recovery by baling. The effects of the type of combine used (rotary vs. conventional), and the effect of the type of baler used (square vs. round) were also investigated.

It is important to recognize that within any given field, crop standard yield can, and usually does, vary greatly over the area. In many instances this variability can occur abruptly over a relatively short distance. To map this variability requires a large number of carefully mapped samples. Randomly selected samples can give a representation of the variability but may not always predict exactly the total field product output. In other words, caution must be used when comparing results. A certain amount of variability must be expected. Trends are more important than individual results.

2.2 Goal Objectives

The goal of this project was to examine the correlation of various sampling methods to determine if a simple method could be used for predicting straw availability. In order to achieve this goal, several objectives were set for this project. They included:

- Selecting three flaxseed crops that represented a sample of typical flax crops, and then setting up test plots in each field.
- Collecting "meter-square" samples across the test plots, drying the samples, threshing the seed, and calculating the seed and MOG yields.
- Determining the impact of removing different lengths of straw from the base of the plant stems.
- Collecting combine discharge samples. These included seed, chaff, and straw. Each sample would be approximately 100 m^2 and serve as a medium size sample. As well, these samples would serve as control samples for other combine and baler treatments.
- Baling straw from harvested windrows dropped by the combine. This provides large-scale comparisons (approximately 4,000 m^2). These samples were for comparing the effect on straw recovery due to:
  - conventional versus rotary combine
  - a square baler versus a round baler
  - the time after harvest until baling
  - changes in straw moisture
- Comparing the collection methods to determine if a suitable method can be developed to predict straw recovery from flax fields based upon seed yield data.
- Providing insight into the mechanical factors that might affect the amount of available straw that can be recovered for other purposes.

2.3 General Description

2.3.1 Equipment

PAMI supplied a John Deere 9600 combine fitted with sample collection test equipment. The equipment sampled the seed going into the grain tank at the same time as the straw and chaff discharged from the combine were collected in separate bags. A Case IH 1680 was rented for harvesting selected windrows. PAMI supplied a David Brown tractor and a John Deere 7800 tractor to power the balers. A John Deere 327 square baler (small square bales) was also supplied by PAMI. A Case IH Model RBX562 round baler (often referred to as either a variable chamber or hard-core baler) was rented. The David Brown tractor was equipped with a front-end loader for handling the round bales.

PAMI's grain truck, equipped with Mass Load Technologies scales supporting the box, was used for weighing the grain harvested. A Prairie Systems (10,000 lb) platform scale on a trailer was used for weighing bales. PAMI also provided a smaller scale, a 4x14 hand sieve, a Kipp Kelly dockage tester, and a Clipper fanning mill with a Massey rethresher for threshing and cleaning the grain samples. PAMI's drying oven was used to dry the m^2 samples.

2.3.2 Crops and Conditions

Three flax crops in the Humboldt area were selected for testing. The particular crops were chosen for their difference in crop height, as well as for maintaining a relatively close proximity to each other, in order to reduce travel time for harvesting and baling operations. The variability in crop height between the fields was desirable as an opportunity to examine the effects on straw recovery.

The three test sites were:

- Site #1 (Ford) was Watson variety flax, which was considered to be the short stand height for the test sites.
- Site #2 (Fleischhacker) was Bethune variety and was the tall stand.
- Site #3 (Hinz) was Bethune variety and was considered to be a medium stand, although thinner (less dense plant population) than the others.

2.3.3 Procedure

Eight, 1 m^2 samples were taken from each test site. These samples came from across a diagonal line running from corner to corner of each plot. The m^2 sample spots were roughly selected at increments of 1/10 of the way down and 1/10 across the plot area. The sample frame (1 m x 1 m) was aligned at 45 degrees to the direction of crop rows. The crop was hand cut as close to the ground as possible. The entire plants were bundled and put into a burlap sack and tagged for identification. As soon as the eight samples were collected, they were weighed. These samples were hung in a well-ventilated area until they were dried. The samples were placed in an oven at 43°C for a minimum of 48 hours. The samples were again weighed and moisture contents calculated.

The initial sample weights were recorded. The bolls were then manually stripped from the plant by hand. Further threshing of the seed and separation of chaff was accomplished with the Massey rethresher, hand sieve, and Kipp Kelly dockage tester. The grain weights were then recorded.

The individual plants were counted and an average straw length estimated for the majority of stems. The bundle of full length straw was then weighed. The stems were arranged so that the stems roughly aligned with each other at the base. Three 10 cm (3.9 in) cuts were taken from the base of the straw bundle, and each section was weighed individually. Based on this data, dry mass yields were calculated for grain, chaff, and the different lengths of straw for each sample.

By using the straw mass for each 10 cm section, calculations were made to estimate straw yield. This provided approximate straw yields that could be used for comparison to combine grain and straw results for a particular stubble height.

The combine collections were done using the John Deere 9600. In its grain tank, the fill auger was fitted with a diverter that shifted the grain flow from the grain tank into a sample bin supported from a load cell. At the rear of the combine, a conveyor cart was attached to the rear axle by two hitches (**Figure 1**). The cart rode on three castor wheels so that it followed the combine. This cart held two sets of conveyors. One set of conveyors consisted of a reversing flat conveyor that diverted straw either onto the ground or to an elevating conveyor, which in turn carried the straw up and into a collection bag. The second set of conveyors ran in line with the combine and carried the chaff rearward and up an elevating conveyor. When a collection was triggered, a swing frame opened a bag into the chaff stream for the same length of time that the straw and grain were collected. The collection times and distances were measured.

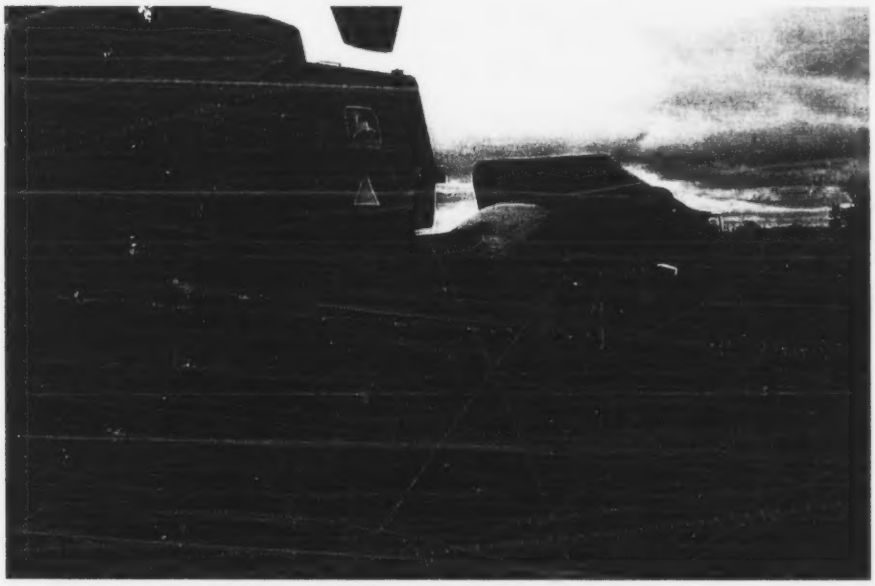

Figure 1. Combine Collection Equipment.

In selected test windrows, the combine was operated at about the same speed for all collections. First, the combine was allowed to stabilize and then a collection was made. The collections typically lasted 15 to 30 seconds while the crop was collected from a distance of 9 to 15 m of travel. The grain, chaff, and straw collected were weighed and used to calculate yields. The collections were repeated along the entire length of the test plot windrows.

Other windrows in the test plot were harvested using either a conventional or a rotary combine. The straw from the combines was dropped into windrows for baling, and the grain from each windrow in the combine grain tank was weighed in the grain truck.

The JD 9600 was used to combine the remaining "conventional" windrows. The Case IH 1680 was used to harvest the "rotary" windrows. The combine settings were as indicated in PAMI reports for that particular model or a similar model.

The windrows from the combines were baled using either a square baler (small bales) or a round baler. Most of the windrows were baled on the same day as they were harvested. Some were left until the next day, some for 5 days, and others for 10 days before being baled. The bales were weighed on the platform scale.

2.4 Scope of Test

Three test crops were selected in the Humboldt area and test plots were staked. The crop varieties were Watson and Bethune (two fields). M^2 samples were taken from each crop prior to windrowing. The samples were hand cut at ground level, stored in burlap bags, weighed, and stored until drying and processing later.

Fields 1 and 2 were windrowed by PAMI, while the farmer co-operator windrowed Field 3. Test windrows were flagged, and harvesting took place once the crop was suitably dry. From the test windrows, two were harvested using the PAMI combine fitted with the batch collection equipment. All samples were weighed in the field. The remainders of the windrows were harvested with either the conventional test combine or the rotary combine according to a test plan. Grain from each windrow was weighed. Some of the straw was baled immediately and some on select days following harvest.

Samples were taken to determine straw and moisture content. All data had to be sorted according to treatments and moisture content accounted for. The data was then selected and compared according to the treatment variables.

2.5 Results and Discussion

2.5.1 Test Results

Appendix I shows the metre square data. **Appendix II** contains combine collection results. **Appendix III** and **IV** show field data and combine/baler data respectively.

2.5.2 Discussion of Results

Meter Square (m^2) Samples: The m^2 samples provide a unique profile of the crop make-up since it included the entire plant. The hand removal of the seed-bearing portion of the plant produced what could be called pure chaff and seed data. The full length straw then indicated the maximum straw that could possibly be available. It also allowed a means of predicting how the straw yield would change based upon the length of stubble (lower portion of plant left attached to the ground after harvest).

This sample method has several inherent advantages. First it must be conducted prior to any harvest procedure, and as such this provides information that could be useful for setting harvest criteria such as cut height. It is also simple from the standpoint of requiring relatively little and inexpensive equipment. It also has little impact on the field. An insignificant amount of material is removed and it does not affect other harvest operations.

There are some considerations that must be taken into account. One of these is timing. Sampling too early can have an effect on the results. The seed must be fully mature otherwise the yield may not be accurate. The samples taken must be properly cared for to prevent moulding. As well, the seed should probably be separate from the plants upon removal from the field in order to better define seed and MOG moisture contents.

Combine Collections: The combine collection provides its own unique data. This procedure gives an indication of what happens to the crop components (seed, chaff, and straw) after being processed.

It is known that some portion of the plant stems are broken into pieces that end up with the seed carrying bolls that form chaff. Also some chaff can be entrapped in the straw samples. The amount of each intermixing depends upon the crop conditions, combine design, combine adjustments, and crop federate.

It is important to recognize a couple of factors about the combine collection system. One is that chaff is largely carried in an air stream from the combine's cleaner. Invariably a small portion cannot be saved by the chaff collection mechanism. It is also important to

note that the seed, chaff, and straw are collected simultaneously. However, within the combine, grain delivery into the tank occurs after several seconds from when the associated material has exited the combine. This allows some mixing of grain over a distance, yielding more of an average that is not a true measure of what came from the straw and chaff samples.

Full Windrow Samples: This method provides a truer average grain yield for an entire windrow. The variability in yield over area is averaged more. This large sample also eliminates errors of timing and area that can greatly affect smaller sampling techniques.

Unfortunately, the straw recovery is subject to the mechanical variables that this project is attempting to quantify.

Grain Yield: **Table 1** shows a comparison of the average grain yields for each of the three fields using three different collection methods. Based upon what we know about the collecting methods, it is reasonable to expect that the combined samples (largest) provided the most accurate average yield with the least variability (the results showed low variability). These results are also the same from all across the test plot.

Table 1. Grain Yield Comparison.

	Metre Square (t/ha)	Collector (t/ha)	Combine/Baler (t/ha)	Collector (% of m^2)	Combine/Baler (% of m^2)	Combine/Baler (% of collector)
Field #1	1.24	1.33	1.24	107.1%	99.8%	93.2%
Field #2	1.23	1.46	1.23	118.6%	100.0%	84.3%
Field #3	1.07	1.41	1.15	131.4%	107.2%	81.6%

The average grain yields also were quite accurately predicted by the m^2 samples. However, the variability amongst the m^2 samples was far greater so that caution would have to be used if using only limited samples. For example, in the worst case a single m^2 sample was 46% higher than the harvested mean yield.

It was expected that the combine collector samples would have been closer to the field averages. For some reason they were consistently higher by up to 20%. The variability was similar to the m^2 samples, which suggests that they were not necessarily in error. This may have indicated the selected windrows were higher yielding than the average for the field or it may have indicated a slight error in diverting time.

The higher grain yield, if in error, would have an effect on any ratios developed for MOG/G and must be taken into consideration.

The important conclusion from this portion of testing is that if enough m^2 samples are taken randomly over a field that the yields calculated should match the field average for combined seed. This should then validate the correlation to the available straw.

Straw Yield: The straw yield results are shown in **Table 2**. It includes the total available straw and the calculated straw yield based upon removing selected portions of the lower stems. These results are compared to the results from the collector and for all combine/baler combination trials. The highlighted yields represent an estimated straw yield from the m^2 data corresponding to the measured stubble height in each field.

Table 2. Straw Yields at Cut Heights Comparison.

	m^2 Straw Yield (t/ha) at Cut Heights					Collector (t/ha)	Combine (t/ha)
	0 cm	10 cm	15 cm	20 cm	30 cm		
Field #1	1.77	1.18	0.96	0.73	0.34	1.10	1.10
Field #2	2.73	1.83		1.20	0.70	1.33	1.13
Field #3	1.78	1.10		0.66	0.34	1.11	0.86

When currently referring to recoverable straw, it means typically the straw left after the seed has been removed by typical harvest methods. In the future this may not always be the case.

From past analysis of the collection methods, it is generally accepted that the combine collection samples should provide the most realistic measure of straw availability. This is because the mechanical action of the combine harvester will have redistributed the plant parts in proportions somewhat consistent with typical harvesting.

In this project, the collector results suggest that the straw yield was equal to or slightly higher than the results that were obtained or calculated from the other two methods. There could be several explanations for this. Obviously the collector results should be higher than for any baled results since there is a far greater opportunity to lose straw in the baling process. The pickup may not retrieve all of the straw and some straw may be lost due to the mechanical action of the baler.

However, it was unclear is why the m^2 samples didn't correlate more closely with the collector results. A closer examination of the data shows that along the length of the test windrows there was a wide range of yields. As well, the two windrows also had considerable variability in yield from one to the other. The yield variability across the field

was also reflected in the m^2 samples. The high variability in yield from end to end and across the plots indicates that the differences in mean values are still well within the normal distribution of yield variations measured by either method. It is quite likely that if more m^2 samples been taken, that the mean values for the two methods would likely have been closer.

No attempt was made to determine if some chaff was entrapped with the straw collected from the combine. The important result was that on average no less straw came out of the combine than was predicted by the m^2 samples.

If the baled straw (as a group of data) is compared to the collector results, the amount recovered was equal in one case but considerably less in the other two fields. This difference would be easy to explain as unrecoverable straw or baling loss, which may well have played a role. Once again, as with the collector results, the baled straw that was recovered was higher than the mean values for an equivalent stubble height produced by the m^2 samples. This difference was typically within the variability of the samples and thus indicated the vulnerability of the m^2 samples at representing the variability within each windrow.

The positive side is that the baled straw recovery rates were at least equal to or higher than predicted from the m^2 sample results.

An important result was the amount of straw that becomes available as the cut height was reduced. In all three fields, reducing the cut height from 20 to 10 cm would have increased the available straw by at least 50% and up to 66%.

Straw to Grain Ratio: One objective was to examine the usefulness of a dimensionless number to relate straw yield to grain yield (S/G ratio) in predicting straw recovery rates based upon historic seed yield data. **Table 3** shows the S/G ratios for the m^2 combine collector and baled results.

Table 3. S/G Ration at Cut Heights Comparison.

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	0 cm	10 cm	15 cm	20 cm	30 cm		
Field #1	1.48	0.98	0.79	0.59	0.27	0.84	0.89
Field #2	2.30	1.53		0.99	0.57	0.93	0.91
Field #3	1.67	1.04		0.62	0.32	0.80	0.73

The important conclusion from this portion of testing is that if enough m^2 samples are taken randomly over a field that the yields calculated should match the field average for combined seed. This should then validate the correlation to the available straw.

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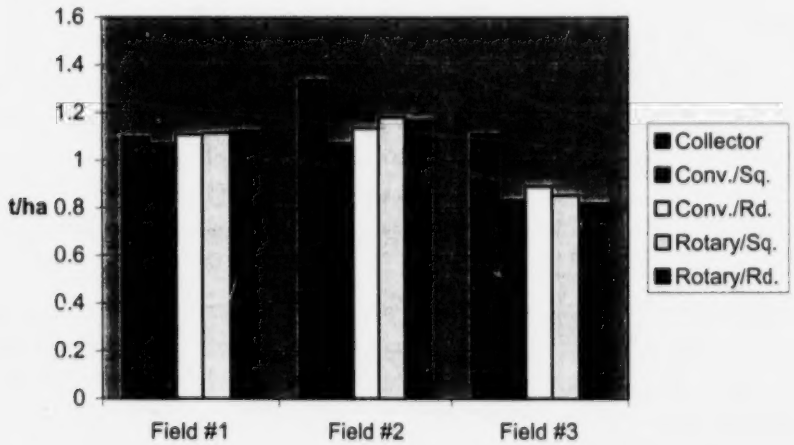
The collector values and the m^2 values should be free from mechanical processes that could cause a difference. In Field 1 and 2, the S/G ratios reflect only a 6% difference. In Field 1, the ratio would predict 6% less, and Field 2 results would indicate that m^2 ratio should be 6% more than the collection. Field 3 differed by nearly 30% with the m^2 samples suggesting a much lower retrieval rate. When these are used to predict straw yield based upon the grain yield in Field 1 and 2, the predicted straw recovery would have been higher than came out of the combine by 8 and 11% respectively and for Field 3 it would have predicted only 56% of what was collected.

For the baled results, S/G ratios would have predicted about 8% more in Field 1, 32% more than recovered in Field 2, and 15% less for Field 3.

Clearly using the S/G ratio and applying it to seed yield would be far less accurate than using the straw yield data from m^2 samples. This is because the seed and straw yield do not necessarily maintain a constant relationship. This was the reason that three different fields were selected. The crop characteristics of straw height, density of stand, and seed yield varied enough to demonstrate that S/G ratios can be equally affected by straw and seed yields, which change independently of each other. This fluctuation in S/G ratio occurs not only from field to field but also within a field.

Effect of Combine and Baler Design: Only the conventional (cylinder walker) combine was used with combine collection equipment, so a detailed comparison to a rotary combine using the collector method could not be made directly. For this reason, the relationships have to be determined based upon the combined effect of combine and baler design. **Figure 2** compares the results from the collector as well as all of the combine/baler trials.



** (Conv.=Conventional Combine; Sq.=Square Baler; Rd.=Round Baler; Rotary=Rotary Combine)*
Figure 2. Straw Yield - Combine/Baler Comparisons.

In all cases, the straw recovered from baling was equal to or slightly less than from the collector results. In Field 1, straw recovered was nearly 100% regardless of which combine/baler combination was used. In Fields 2 and 3, overall recovery rate was somewhat lower, dropping to about 86% and 76.5% respectively.

These results might normally be expected since some of the straw might not get picked by the baler, and some might be lost from the baler. However, flax straw, after passing through a combine, tends to cling together, which makes it much easier than most crops to retrieve with a baler pick-up.

As mentioned earlier, one factor not accounted for was the amount of chaff that may have mixed with the straw. This chaff has the potential to be either picked by the baler or to be shaken out of the straw, but neither could be measured.

Since only two windrows in each field were sampled with the collector and at least four windrows were baled, the balers likely averaged out field variability better than the collector did. For example, one collection windrow in Field 2 showed that bale recovery was 93% while in Field 3 for one windrow it was 86%. The other two higher yielding windrows then raised the average.

However, the results that are more important as a predictive value are those from the m^2 samples. Those results showed a bale recovery rate of 115% in Field 1, 95% in Field 2, and 130% in Field 3. These results again reinforce a need for more m^2 samples to achieve higher accuracy.

The smaller difference in yield measured for the different combine and baler combinations suggest that the effect of mechanical differences are small for flax straw recovery. The yield difference between the maximum yield from bale measurements was 10% or less. This is well below the variations in yield between other samples. This can be easily seen in **Figure 3**, which isolates the machine factors. They are so close that no practical difference could be associated with any machine.

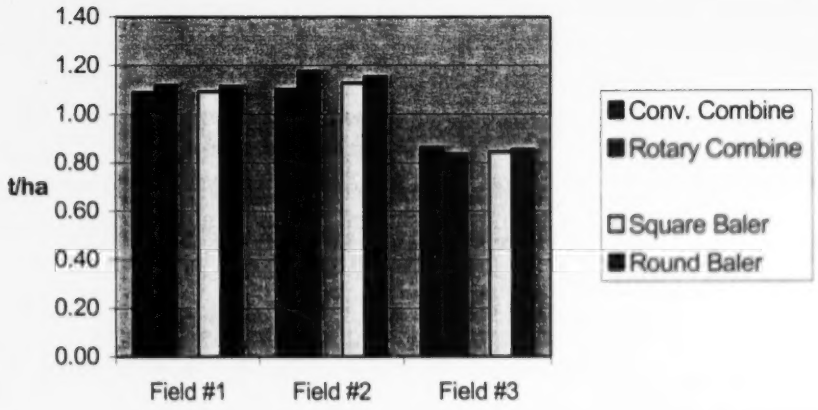


Figure 3. Straw Yield – Machine Influence.

Time of Baling: On all three tests sites, select windrows were baled on subsequent days after harvest. **Figure 4** shows the results from time of baling. These results show that over the 10 day period, there may be a slight reduction at the 10 day time as compared to the day of harvest. However, taking into account the variability in straw yield makes any further analysis speculation.

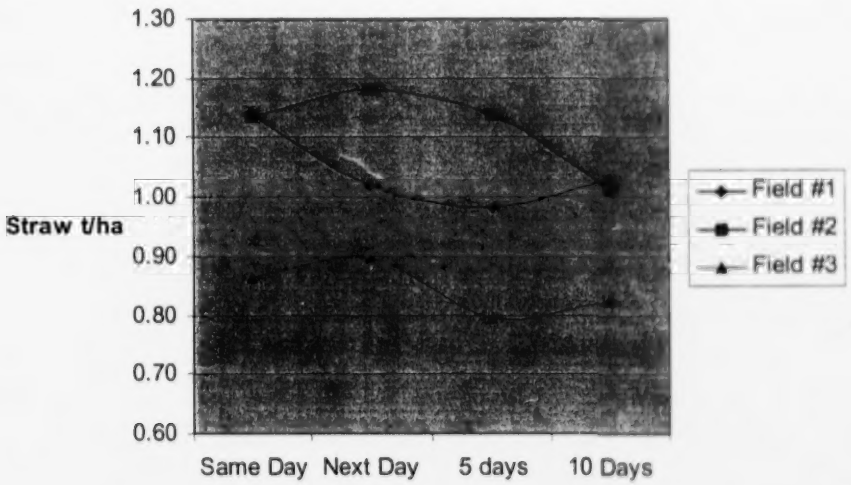


Figure 4. Time of Baling Impact on Yield.

It appears that at most, the reduction in recoverable straw would be less than 10% unless major weather factors intervened.

Moisture Content: There was not adequate data collected to determine any difference in recovery due to the straw moisture within normal straw moisture contents.

The biggest factor that the moisture appears to have would be on the mass of the bale.

5. Equipment

No equipment was purchased for this project. The following equipment was rented.

- Case IH 1680 combine
- Case IH RBX round baler
- John Deere 9600 combine
- John Deere 7800 tractor
- John Deere 327 small square baler
- David Brown 990 tractor
- Ford 3 ton grain truck
- Rainbow tandem trailer

6. Project Developed Materials

There were no materials developed by PAMI as part of this project. Data will be forwarded to Lawrence Townley-Smith at PFRA.

7. Project Photos

Photos for this project are contained in the body of the report.

8. ICAR Data Entry

This project has been entered into the Inventory of Canadian Agri-Food Research (ICAR) database. The associated ICAR reference number is 33331362.

Appendix I

Metre Square Data

Field Sample Data

Note: All Weights in Grams, all samples from 1 square meter

Field #	Sample #	Wet Weight +Bag	Dry Weight +Bag	Initial Weight	Bag Weight	Straw Only Weight	Grain Weight	Average Straw Length (cm)	Number Of Plants
1	1	751.5	625.5	673.5	333.4	135.6	110.8	48	409
1	2	732.6	638.2	694.1	327.7	168.8	117.7	48	536
1	3	761.8	682.8	737.4	306.6	187.3	97.8	44	530
1	4	790.9	707.4	754.6	338.9	182.4	122.2	48	498
1	5	787.2	709.1	750.2	340.7	186.3	99.5	46	512
1	6	771.2	694.6	733.1	319.0	174.8	135.4	50	590
1	7	920.5	829.6	872.9	335.0	218.2	194.0	45	902
1	8	974.5	859.2	906.5	346.7	257.4	175.4	53	495
Average		811	718	765.3	331.0	188.9	131.6	48	559
2	1	1400.4	1019.0	1114.6	335.7	404.4	203.9	76	522
2	2	796.1	718.4	781.7	322.5	269.9	105.6	63	492
2	3	1128.6	873.1	940.9	296.4	341.0	161.0	68	576
2	4	948.8	816.4	877.7	333.2	269.1	164.7	63	506
2	5	775.5	714.7	765.2	329.1	236.2	105.5	58	549
2	6	1000.8	788.2	838.8	333.5	289.1	123.7	67	450
2	7	1012.2	801.9	845.1	348.7	312.5	95.7	70	626
2	8	772.5	704.7	747.0	353.2	225.3	98.3	60	448
Average		979	805	863.9	331.5	293.4	132.3	66	521
3	1	679.3	634.0	695.8	358.1	161.9	101.1	57	336
3	2	739.5	671.7	732.0	339.6	178.9	132.0	62	371
3	3	733.0	687.9	750.0	355.6	218.7	109.7	61	476
3	4	712.3	666.0	720.8	331.5	195.0	118.8	59	416
3	5	690.2	616.5	661.7	321.2	158.5	113.7	53	427
3	6	748.1	696.3	742.3	320.0	231.5	104.6	64	549
3	7	703.8	654.2	699.4	344.8	175.1	111.3	57	364
3	8	854.2	728.9	778.5	341.9	217.8	135.1	58	429
Average		733	669	722.6	339.1	192.2	115.8	59	421

Field Sample Calculations

Project # 5402E

Note: All samples from 1 square meter

Sample #	Field Moisture Content	Dry Straw Yield (t/ha) at cut heights 0 cm	10 cm	20 cm	30 cm	M.C. at Processing (%)	Dry Grain Yield (t/ha)	Wet Grain Yield (bu/ac) @ 14.5%	Dry Chaff Yield (t/ha)	MOG/G Ratio at Cut Heights 0 cm	10 cm	20 cm	30 cm	STRAW/G Ratio at Cut Heights 0 cm	10 cm	20 cm	30 cm
F1S1	30.1%	1.3	0.9	0.5	0.2	14.1%	1.03	17.9	0.9	2.1	1.7	1.4	1.0	1.2	0.9	0.5	0.2
F1S2	23.3%	1.6	1.0	0.6	0.2	15.3%	1.08	18.8	0.7	2.1	1.6	1.2	0.9	1.4	0.9	0.5	0.2
F1S3	17.4%	1.7	1.1	0.6	0.2	12.7%	0.91	15.8	1.3	3.4	2.7	2.1	1.7	1.9	1.2	0.6	0.2
F1S4	18.5%	1.7	1.1	0.7	0.3	11.4%	1.15	19.9	1.0	2.4	1.9	1.5	1.2	1.5	1.0	0.6	0.3
F1S5	17.5%	1.8	1.2	0.7	0.4	10.0%	0.94	16.4	1.2	3.1	2.5	2.0	1.6	1.9	1.3	0.8	0.4
F1S6	16.9%	1.7	1.1	0.7	0.3	9.3%	1.28	22.3	1.0	2.1	1.6	1.3	1.0	1.3	0.9	0.5	0.3
F1S7	15.5%	2.1	1.4	0.8	0.4	8.0%	1.84	32.1	1.2	1.8	1.4	1.1	0.9	1.1	0.7	0.5	0.2
F1S8	18.4%	2.4	1.8	1.2	0.8	8.4%	1.66	28.9	1.2	2.2	1.8	1.5	1.2	1.5	1.1	0.7	0.5
Average	19.7%	1.77	1.2	0.7	0.3	11.2%	1.24	21.5	1.1	2.4	1.9	1.5	1.2	1.5	1.0	0.6	0.3
F2S1	35.8%	3.7	2.6	1.8	1.2	12.3%	1.86	32.4	1.6	2.8	2.3	1.8	1.5	2.0	1.4	1.0	0.6
F2S2	16.4%	2.5	1.6	0.9	0.5	13.8%	0.97	16.9	0.8	3.3	2.4	1.8	1.3	2.6	1.6	1.0	0.5
F2S3	30.7%	3.2	2.1	1.4	0.8	10.5%	1.49	26.0	1.3	3.0	2.3	1.8	1.4	2.1	1.4	0.9	0.5
F2S4	21.5%	2.5	1.7	1.2	0.7	11.3%	1.53	26.7	1.0	2.3	1.8	1.5	1.1	1.6	1.1	0.8	0.5
F2S5	13.6%	2.2	1.4	0.8	0.4	11.6%	0.99	17.2	0.9	3.1	2.3	1.7	1.3	2.2	1.4	0.8	0.4
F2S6	31.9%	2.7	1.8	1.2	0.8	10.0%	1.16	20.2	0.9	3.1	2.3	1.8	1.4	2.3	1.6	1.1	0.7
F2S7	31.7%	3.0	2.0	1.3	0.8	8.7%	0.91	15.8	0.8	4.2	3.1	2.4	1.8	3.3	2.2	1.4	0.9
F2S8	16.2%	2.1	1.4	0.9	0.5	10.7%	0.93	16.1	0.7	3.0	2.2	1.7	1.3	2.3	1.5	1.0	0.6
Average	24.7%	2.73	1.8	1.2	0.7	11.1%	1.23	21.4	1.0	3.1	2.3	1.8	1.4	2.3	1.5	1.0	0.6
F3S1	14.1%	1.5	0.9	0.5	0.3	18.3%	0.92	16.0	0.7	2.3	1.7	1.3	1.0	1.6	1.0	0.6	0.3
F3S2	17.0%	1.6	1.0	0.6	0.3	15.4%	1.21	21.1	0.7	2.0	1.4	1.1	0.9	1.4	0.8	0.5	0.2
F3S3	12.0%	2.0	1.2	0.7	0.3	15.7%	1.01	17.5	0.6	2.6	1.8	1.3	0.9	2.0	1.2	0.7	0.3
F3S4	12.2%	1.8	1.1	0.7	0.4	14.1%	1.10	19.1	0.7	2.3	1.7	1.3	1.0	1.6	1.0	0.6	0.3
F3S5	20.0%	1.5	0.9	0.5	0.2	13.3%	1.06	18.4	0.6	2.0	1.4	1.1	0.8	1.4	0.8	0.5	0.2
F3S6	12.1%	2.2	1.3	0.8	0.4	10.9%	0.98	17.1	0.8	3.0	2.2	1.7	1.3	2.2	1.4	0.8	0.4
F3S7	13.8%	1.6	1.1	0.7	0.4	12.7%	1.04	18.1	0.6	2.2	1.6	1.2	1.0	1.6	1.0	0.6	0.3
F3S8	24.5%	2.0	1.3	0.8	0.4	11.4%	1.26	22.0	0.8	2.2	1.6	1.2	1.0	1.6	1.0	0.6	0.3
Average	15.7%	1.78	1.1	0.7	0.3	14.0%	1.07	18.7	0.7	2.3	1.7	1.3	1.0	1.7	1.0	0.6	0.3

Appendix II

Combine Collection Results

COMBINE COLLECTION RESULTS

Flax Field #1 (Ford)		DIXON								SEP 26, 2003	DIXON								SEP 26, 2003		
		WINDROW #3									WINDROW #8									ALL RUNS	
RUN #		1	2	3	4	5	6	7	8	Mean	1	2	3	4	5	6	7	8	Mean	Mean	Std Dev
SWATH WIDTH (ft)		26 0	26 0	26 0	26 0	26 0	26 0	26 0			25 6	25 6	25 6	25 6	25 6	25 6	25 6	25 6			
DISTANCE COUNT		250	250	250	250	250	250	250			300	250	250	250	250	250	250	250			
COLLECTION DISTANCE (ft)		43 1	43 1	43 1	43 1	43 1	43 1	43 1			51 8	43 1	43 1	43 1	43 1	43 1	43 1	43 1			
STRAW COLLECTION TIME (sec)		25 46	27 43	24 38	29 49	29 68	27 12	24 19			30 37	23 18	25 07	24 07	31 19	22 44	25	22 03			
GRAIN COLLECTION TIME (sec)		27 14	30 84	28 88	31 53	32 02	28 53	30 21			31 95	24 88	27 54	25 48	32 59	24 29	26 87	23 69			
COLLECTION AREA (sq ft)		1119 1	1119 1	1119 1	1119 1	1119 1	1119 1	1119 1			1324 8	1104 0	1104 0	1104 0	1104 0	1104 0	1104 0	1104 0			
COLLECTION AREA (sq m)		104 0	104 0	104 0	104 0	104 0	104 0	104 0			123 1	102 6	102 6	102 6	102 6	102 6	102 6	102 6			
CHAFF TARE (kg)		2 4	2 4	2 4	2 4	2 4	2 4	2 4			2 4	2 4	2 4	2 4	2 4	2 4	2 4	2 4			
CHAFF MASS GROSS (kg)		8 76	7 7	7 1	8 4	6 8	7 5	7 0			8 8	6 9	7 5	6 7	8 4	7 6	8 2	9 1			
CHAFF MASS (kg)		6 36	5 30	4 70	6 00	4 36	5 05	4 56			6 35	4 47	5 13	4 34	5 98	5 18	5 81	6 7			
CHAFF MASS (lb)		14 02	11 68	10 36	13 23	9 59	11 13	10 03			14 00	9 85	11 31	9 57	13 18	11 42	12 81	14 77			
STRAW TARE (kg)		5 02	5 02	5 02	5 02	5 02	5 02	5 02			5 02	5 02	5 02	5 02	5 02	5 02	5 02	5 02			
STRAW MASS GROSS (kg)		19 6	18 80	19 00	19 29	14 00	15 66	15 45			19 24	13 86	18 15	13 92	20 15	21 32	17 18	23 50			
STRAW MASS (kg)		14 58	13 78	13 98	14 27	8 98	10 64	10 43			14 22	8 84	13 13	8 9	15 13	16 3	12 16	18 48			
STRAW MASS (lb)		32 14	30 38	30 82	31 46	19 80	23 46	22 99			31 35	19 49	28 95	19 62	33 36	35 93	26 81	40 74			
GRAIN MASS (kg)		17 1	17 46	19 14	17 03	13 35	14 05	15 68			19 3	12 45	15 4	12 37	10	13 44	15 95	18 71			
GRAIN MASS (lb)		37 7	38 5	42 2	37 5	29 4	31 0	34 6			42 5	27 4	34 0	27 3	22 0	29 6	35 2	41 2			
GRAIN MOISTURE (%)		10 1	8 9	10 7	12 3	12	11	13		9 9	10	11	11	11	11	11	9 9	13	9 9	9 9	0 13
STRAW MOISTURE (%)		12 9	12 4	12 4	12 4	12	12	12		12	12	12	12	12	12	12	12	13	11 9	11 9	2 5
CHAFF YIELD (t/ha)		0 81	0 51	0 45	0 58	0 42	0 49	0 44		0 51	0 62	0 44	0 50	0 42	0 58	0 51	0 57	0 65	0 52	0 51	0 07
CHAFF YIELD (lb/ac)		646	455	403	515	373	433	390		445	460	389	446	378	520	451	505	583	466	457	69
STRAW YIELD (t/ha)		1 40	1 33	1 34	1 37	0 86	1 02	1 00		1 14	1 16	0 86	1 28	0 87	1 48	1 59	1 19	1 80	1 28	1 24	0 28
STRAW YIELD (lb/ac)		1251	1182	1200	1225	771	913	895		1062	1031	769	1142	774	1316	1418	1058	1607	1139	1103	249
GRAIN YIELD (t/ha)		1 54	1 49	1 55	1 53	1 19	1 28	1 21		1 40	1 49	1 13	1 37	1 14	0 93	1 21	1 45	1 70	1 30	1 35	0 21
GRAIN YIELD (lb/ac)		1467	1498	1642	1461	1146	1206	1346		1395	1399	1083	1340	1076	870	1169	1387	1628	1244	1315	318
GRAIN YIELD (bu/ac)@56lb/bu		26 2	26 8	29 3	26 1	20 5	21 5	24 0		24 9	25 0	19 3	23 9	19 2	15 5	20 9	24 8	29 1	22 2	23 47	5 90
																			1 32	1 21	0 30
																			0 94	0 85	0 23
																			0 30	0 30	0 03
																			0 42	0 42	0 06
																			0 36	0 36	0 08
CHAFF MASS (kg)	(adjusted)	5 84	4 70	4 16	5 7	3 85	4 48	4 03			5 83	3 95	4 55	3 85	5 30	4 59	5 15	5 94			
CHAFF MASS (lb)	(adjusted)	12 42	10 36	9 18	11 7	8 51	9 87	8 89			12 41	8 73	10 02	8 48	11 69	10 12	11 35	13 09			
STRAW MASS (kg)	(adjusted)	12 92	12 21	12 39	12 65	7 96	9 43	9 24			12 60	7 83	11 64	7 89	13 41	14 44	10 78	16 38			
STRAW MASS (lb)	(adjusted)	28 48	26 92	27 31	27 88	17 54	20 79	20 38			27 78	17 27	25 65	17 39	29 56	31 84	23 76	36 10			
GRAIN MASS (kg)	(adjusted)	15 37	15 73	17 26	15 34	12 06	12 66	14 14			17 41	11 19	13 86	11 17	9 00	12 11	14 37	16 84			
GRAIN MASS (lb)	(adjusted)	33 89	34 68	38 06	33 83	26 58	27 91	31 18			38 38	24 68	30 56	24 63	19 84	26 70	31 68	37 12			
CHAFF YIELD (t/ha)	(adjusted)	0 64	0 45	0 40	0 51	0 37	0 43	0 39			0 46	0 39	0 44	0 37	0 52	0 45	0 50	0 58		0 45	0 06
CHAFF YIELD (lb/ac)	(adjusted)	484	403	357	456	331	384	345			408	345	396	336	461	399	449	516		405	68
STRAW YIELD (t/ha)	(adjusted)	1 24	1 17	1 19	1 22	0 77	0 91	0 89			1 02	0 76	1 13	0 77	1 31	1 41	1 05	1 60		1 10	0 25
STRAW YIELD (lb/ac)	(adjusted)	1109	1048	1063	1086	689	808	793			913	681	1012	686	1166	1256	937	1424		978	221
GRAIN YIELD (t/ha)	(adjusted)	1 48	1 51	1 66	1 48	1 16	1 22	1 36			1 41	1 09	1 35	1 09	0 88	1 18	1 40	1 64		1 33	0 22
GRAIN YIELD (lb/ac)	(adjusted)	1319	1350	1481	1317	1034	1086	1214			1262	974	1206	972	783	1053	1250	1465		1184	197
																				1 55	0 36
																				1382	269
																				1 19	0 22
																				0 84	0 23
																				0 30	0 03
																				0 42	0 06
																				0 35	0 08

COMBINE COLLECTION RESULTS

Flax - Field #2 (Fleischhacker)		FULDA								OCT 1, 2003	FULDA								OCT 1, 2003	
		WINDROW #3									WINDROW #8									ALL RUNS
RUN #		1	2	3	4	5	6	7	8	Mean	1	2	3	4	5	6	7	8	Mean	Mean	Std Dev
SWATH WIDTH (ft)		25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0		24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8		
DISTANCE COUNT		200	200	200	200	200	200	200	200		250	200	200	200	200	200	200	200		
COLLECTION DISTANCE (ft)		34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5		43.1	34.5	34.5	34.5	34.5	34.5	34.5	34.5		
STRAW COLLECTION TIME (sec)		17.57	19.59	17.52	19.81	15.09	19.53	18.62	20.09		31.69	22.06	23.15	22.63	20.4	18.65	17.52	15.67		
GRAIN COLLECTION TIME (sec)		18.97	22.17	19.31	22.62	16.96	21.08	21.42	21.18		33.55	23.5	26.49	24.83	21.9	21.2	19.54	17.23		
COLLECTION AREA (sq ft)		862.5	862.5	862.5	862.5	862.5	862.5	862.5	862.5		1067.3	853.9	853.9	853.9	853.9	853.9	853.9	853.9		
COLLECTION AREA (sq m)		80.1	80.1	80.1	80.1	80.1	80.1	80.1	80.1		99.2	79.3	79.3	79.3	79.3	79.3	79.3	79.3		
CHAFF TARE (kg)		2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36		2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36		
CHAFF MASS GROSS (kg)		7.05	7.6	7.4	7.9	8.2	8.1	6.9	6.95		11.6	7.6	7.6	8.0	8.2	6.3	6.6	6.7		
CHAFF MASS (kg)		4.69	5.21	5	5.49	5.84	5.72	4.57	4.59		9.25	5.19	5.19	5.59	5.88	3.89	4.22	4.37		
CHAFF MASS (lb)		10.34	11.49	11.02	12.10	12.87	12.61	10.08	10.12		20.39	11.44	11.44	12.32	12.96	8.58	9.30	9.63		
STRAW TARE (kg)		4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8		4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8		
STRAW MASS GROSS (kg)		15	15.02	15.87	17.36	16.90	18.77	13.52	14.47		31.21	20.35	17.56	17.46	18.16	12.36	13.60	15.15		
STRAW MASS (kg)		10.2	10.22	11.07	12.56	12.1	13.97	8.72	9.67		26.41	15.55	12.76	12.66	13.36	7.56	8.8	10.35		
STRAW MASS (lb)		22.49	22.53	24.40	27.69	26.68	30.80	19.22	21.32		58.22	34.28	28.13	27.91	29.45	16.67	19.40	22.82		
GRAIN MASS (kg)		10.87	12.15	9.8	14.12	16.52	12.74	11.95	10.82		24.03	10.09	14.1	15.7	15.52	10.91	8.92	9.05		
GRAIN MASS (lb)		24.0	26.8	21.6	31.1	36.4	28.1	26.3	23.9		53.0	22.2	31.1	34.6	34.2	24.1	19.7	20.0		
GRAIN TARE (%)		13.0	0					7		8.0							0	2	0.82	8.1	0.18
STRAW MOISTURE (%)		13.0	9.6							10.9							10	10.2	10.1	11.2	1.9
CHAFF YIELD (t/ha)		0.69	0.65	0.62	0.69	0.73	0.71	0.57	0.57	0.65	0.93	0.65	0.65	0.70	0.74	0.49	0.53	0.55	0.65	0.65	0.11
CHAFF YIELD (lb/ac)		622	580	557	611	650	637	509	511	581	832	584	584	629	661	437	475	491	581	579	96
STRAW YIELD (t/ha)		1.27	1.28	1.38	1.57	1.51	1.74	1.09	1.21	1.36	2.66	1.96	1.61	1.60	1.68	0.95	1.11	1.30	1.61	1.50	0.41
STRAW YIELD (lb/ac)		1136	1138	1233	1398	1347	1556	971	1077	1212	2376	1749	1435	1424	1503	850	990	1164	1436	1334	368
GRAIN YIELD (t/ha)		1.26	1.34	1.11	1.54	1.83	1.47	1.30	1.28	1.37	2.29	1.19	1.55	1.80	1.82	1.21	1.01	1.04	1.44	1.44	0.36
GRAIN YIELD (lb/ac)		1210	1353	1091	1572	1839	1418	1331	1205	1374	2162	1135	1586	1766	1745	1227	1003	1018	1406	1416	333
GRAIN YIELD (bu/ac)@56lb/bu		21.6	24.2	19.5	28.1	32.8	25.3	23.8	21.5	24.5	38.6	20.3	28.3	31.5	31.2	21.9	17.9	18.2	25.3	25.29	6.95
																				1.37	0.28
																				0.96	0.21
																				0.31	0.08
																				0.45	0.10
																				0.42	0.06
CHAFF MASS (kg)	(adjusted)	4.19	4.65	4.45	4.89	5.21	5.11	4.08	4.10		8.26	4.63	4.63	4.99	5.25	3.47	3.77	3.90			
CHAFF MASS (lb)	(adjusted)	9.23	10.25	9.8	10.8	11.49	11.26	8.99	9.03		18.20	10.21	10.21	11.00	11.57	7.65	8.31	8.60			
STRAW MASS (kg)	(adjusted)	9.11	9.12	9.88	11.21	10.80	12.47	7.78	8.63		23.58	13.88	11.39	11.30	11.93	6.75	7.86	9.24			
STRAW MASS (lb)	(adjusted)	20.07	20.11	21.79	24.72	23.81	27.49	17.16	19.03		51.98	30.60	25.11	24.92	26.29	14.88	17.32	20.37			
GRAIN MASS (kg)	(adjusted)	9.97	11.17	9.01	12.99	15.21	11.75	11.02	9.94		22.08	9.25	12.90	14.43	14.26	10.03	8.19	8.31			
GRAIN MASS (lb)	(adjusted)	21.97	24.62	19.86	28.64	33.54	25.90	24.29	21.92		48.69	20.40	28.44	31.81	31.44	22.10	18.05	18.32			
CHAFF YIELD (t/ha)	(adjusted)	0.52	0.56	0.54	0.61	0.65	0.64	0.51	0.51		0.83	0.58	0.58	0.63	0.66	0.44	0.47	0.49		0.58	0.09
CHAFF YIELD (lb/ac)	(adjusted)	468	518	497	548	580	569	454	455		743	521	521	561	590	391	424	439		517	86
STRAW YIELD (t/ha)	(adjusted)	1.14	1.14	1.23	1.40	1.35	1.56	0.97	1.08		2.36	1.75	1.44	1.42	1.50	0.85	0.99	1.16		1.33	0.34
STRAW YIELD (lb/ac)	(adjusted)	1014	1016	1100	1248	1209	1389	867	961		2121	1561	1281	1271	1341	759	884	1039		1191	308
GRAIN YIELD (t/ha)	(adjusted)	1.24	1.39	1.12	1.62	1.90	1.47	1.38	1.24		2.23	1.17	1.63	1.82	1.80	1.26	1.03	1.05		1.46	0.34
GRAIN YIELD (lb/ac)	(adjusted)	1110	1243	1003	1446	1694	1308	1227	1107		1987	1041	1451	1623	1604	1128	921	934		1302	307
																				1.91	0.46
																				1708	411
																				1.33	0.32
																				0.93	0.21
																				0.31	0.08
																				0.45	0.10
																				0.41	0.05

COMBINE COLLECTION RESULTS

Flax - Field #1 (Lord)		DIXON								SEP 26, 2003	DIXON								SEP 26, 2003		
		WINDROW #3									WINDROW #8									ALL WIPS	
RUN #		1	2	3	4	5	6	7	8	Mean	1	2	3	4	5	6	7	8	Mean	Mean	Std Dev
SWATH WIDTH (ft)		26.0	26.0	26.0	26.0	26.0	26.0	26.0			25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6			
DISTANCE COUNT		250	250	250	250	250	250	250			300	250	250	250	250	250	250	250			
COLLECTION DISTANCE (ft)		43.1	43.1	43.1	43.1	43.1	43.1	43.1			51.6	43.1	43.1	43.1	43.1	43.1	43.1	43.1			
STRAW COLLECTION TIME (sec)		25.46	27.43	24.38	29.49	29.68	27.12	24.19			30.37	23.18	25.07	24.07	31.19	22.44	25	22.03			
GRAIN COLLECTION TIME (sec)		27.14	30.84	28.69	31.53	32.02	29.53	30.23			31.95	24.69	27.54	25.43	32.59	24.29	26.87	23.69			
COLLECTION AREA (sq ft)		1119.1	1119.1	1119.1	1119.1	1119.1	1119.1	1119.1			1324.8	1104.0	1104.0	1104.0	1104.0	1104.0	1104.0	1104.0			
COLLECTION AREA (sq m)		104.0	104.0	104.0	104.0	104.0	104.0	104.0			123.1	102.6	102.6	102.6	102.6	102.6	102.6	102.6			
CHAFF TARE (kg)		2.4	2.4	2.4	2.4	2.4	2.4	2.4			2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4			
CHAFF MASS GROSS (kg)		8.76	7.7	7.1	8.4	6.8	7.5	7.0			8.8	6.9	7.5	6.7	8.4	7.6	8.2	9.1			
CHAFF MASS (kg)		6.36	5.30	4.70	6.00	4.35	5.05	4.55			6.35	4.47	5.13	4.34	5.98	5.18	5.81	6.7			
CHAFF MASS (lb)		14.02	11.68	10.36	13.23	9.59	11.13	10.03			14.00	9.85	11.31	9.57	13.18	11.42	12.81	14.77			
STRAW TARE (kg)		5.02	5.02	5.02	5.02	5.02	5.02	5.02			5.02	5.02	5.02	5.02	5.02	5.02	5.02	5.02			
STRAW MASS GROSS (kg)		19.6	18.80	19.00	19.29	14.00	15.66	15.45			19.24	13.86	18.15	13.92	20.15	21.32	17.18	23.50			
STRAW MASS (kg)		14.58	13.78	13.98	14.27	8.98	10.64	10.43			14.22	8.84	13.13	8.9	15.13	16.3	12.16	18.48			
STRAW MASS (lb)		32.14	30.38	30.82	31.46	19.80	23.46	22.99			31.35	19.49	28.95	19.62	33.36	35.93	26.81	40.74			
GRAIN MASS (kg)		17.1	17.46	19.14	17.03	13.35	14.05	15.68			19.3	12.45	15.4	12.37	10	13.44	15.95	18.71			
GRAIN MASS (lb)		37.7	38.5	42.2	37.5	29.4	31.0	34.6			42.5	27.4	34.0	27.3	22.0	29.6	35.2	41.2			
GRAIN MOISTURE (%)		10.1	9.9	9.8	9.9	9.7	9.9	9.8		9.9	9.8	10.1	10	9.7	10	9.9	9.9	10	9.9	9.9	0.13
STRAW MOISTURE (%)		12.9	12.4	12.4	12.1	13.4	13.8	11.9		12.7	11.2	9.1	11.5	12.2	15.5	13.4	12.2	4.5	11.2	11.9	2.5
CHAFF YIELD (t/ha)		0.61	0.51	0.45	0.58	0.42	0.49	0.44		0.50	0.52	0.44	0.50	0.42	0.58	0.51	0.57	0.65	0.52	0.51	0.07
CHAFF YIELD (lb/ac)		546	455	403	515	373	433	390		445	460	389	446	378	520	451	505	583	466	457	65
STRAW YIELD (t/ha)		1.40	1.33	1.34	1.37	0.86	1.02	1.00		1.19	1.16	0.86	1.28	0.87	1.48	1.59	1.19	1.80	1.28	1.24	0.28
STRAW YIELD (lb/ac)		1251	1182	1200	1225	771	913	895		1062	1031	769	1142	774	1316	1418	1058	1607	1139	1105	249
GRAIN YIELD (t/ha)		1.54	1.49	1.55	1.53	1.19	1.26	1.21		1.40	1.49	1.13	1.37	1.14	0.93	1.21	1.45	1.70	1.30	1.35	0.21
GRAIN YIELD (lb/ac)		1467	1498	1642	1461	1146	1206	1346		1395	1399	1083	1340	1076	870	1169	1387	1628	1244	1315	218
GRAIN YIELD (bu/ac)@56lb/bu		26.2	26.8	29.3	26.1	20.5	21.5	24.0		24.9	25.0	19.3	23.9	19.2	15.5	20.9	24.8	29.1	22.2	23.47	3.90
MOG/GRAIN		1.22	1.09	0.98	1.19	1.00	1.12	0.96		1.08	1.07	1.07	1.19	1.07	2.11	1.60	1.13	1.35	1.32	1.21	0.30
STRAW/GRAIN		0.85	0.79	0.73	0.84	0.67	0.76	0.67		0.76	0.74	0.71	0.85	0.72	1.51	1.21	0.76	0.99	0.94	0.85	0.23
CHAFF/MOG		0.30	0.28	0.25	0.30	0.33	0.32	0.30		0.30	0.31	0.34	0.28	0.33	0.28	0.24	0.32	0.27	0.30	0.30	0.03
CHAFF/STRAW		0.44	0.38	0.34	0.42	0.48	0.47	0.44		0.42	0.45	0.51	0.39	0.49	0.40	0.32	0.48	0.36	0.42	0.42	0.06
CHAFF/GRAIN		0.37	0.30	0.25	0.36	0.33	0.36	0.29		0.32	0.33	0.36	0.33	0.36	0.60	0.39	0.36	0.36	0.38	0.36	0.08
CHAFF MASS (kg)	(adjusted)	5.64	4.70	4.16	5.32	3.85	4.48	4.03			5.63	3.96	4.55	3.85	5.30	4.59	5.15	5.94			
CHAFF MASS (lb)	(adjusted)	12.42	10.35	9.18	11.72	8.50	9.87	8.89			12.41	8.73	10.02	8.48	11.68	10.12	11.35	13.09			
STRAW MASS (kg)	(adjusted)	12.92	12.21	12.39	12.65	7.96	9.43	9.24			12.60	7.83	11.64	7.89	13.41	14.44	10.78	16.38			
STRAW MASS (lb)	(adjusted)	28.48	26.92	27.31	27.88	17.54	20.79	20.38			27.78	17.27	25.65	17.39	29.56	31.84	23.76	36.10			
GRAIN MASS (kg)	(adjusted)	15.37	15.73	17.26	15.34	12.06	12.66	14.14			17.41	11.19	13.86	11.17	9.00	12.11	14.37	16.84			
GRAIN MASS (lb)	(adjusted)	33.89	34.68	38.06	33.83	26.58	27.91	31.18			38.38	24.68	30.56	24.63	19.84	26.70	31.68	37.12			
CHAFF YIELD (t/ha)	(adjusted)	0.54	0.45	0.40	0.51	0.37	0.43	0.39		0.44	0.46	0.39	0.44	0.37	0.52	0.45	0.50	0.58	0.46	0.45	0.06
CHAFF YIELD (lb/ac)	(adjusted)	484	403	357	456	331	384	346		394	408	345	395	335	461	399	448	516	413	405	58
STRAW YIELD (t/ha)	(adjusted)	1.24	1.17	1.19	1.22	0.77	0.91	0.89		1.06	1.02	0.76	1.13	0.77	1.31	1.41	1.05	1.60	1.13	1.10	0.25
STRAW YIELD (lb/ac)	(adjusted)	1109	1048	1063	1085	683	809	793		941	913	681	1012	686	1166	1256	937	1424	1010	978	221
GRAIN YIELD (t/ha)	(adjusted)	1.48	1.51	1.66	1.48	1.16	1.22	1.36		1.41	1.41	1.09	1.35	1.09	0.88	1.18	1.40	1.64	1.26	1.33	0.22
GRAIN YIELD (lb/ac)	(adjusted)	1319	1350	1481	1317	1034	1086	1214		1257	1262	974	1206	972	783	1053	1250	1465	1120	1184	197
[redacted]										1.50									1.60	1.55	0.30
[redacted]										1336									1423	1382	269
MOG/GRAIN	(adjusted)	1.21	1.07	0.98	1.17	0.98	1.10	0.94		1.06	1.05	1.05	1.17	1.05	2.08	1.57	1.11	1.33	1.30	1.19	0.29
STRAW/GRAIN	(adjusted)	0.84	0.78	0.72	0.82	0.66	0.74	0.65		0.75	0.72	0.70	0.84	0.71	1.49	1.19	0.75	0.97	0.92	0.84	0.23
CHAFF/MOG	(adjusted)	0.30	0.28	0.25	0.30	0.33	0.32	0.30		0.30	0.31	0.34	0.28	0.33	0.28	0.24	0.32	0.27	0.30	0.30	0.03
CHAFF/STRAW	(adjusted)	0.44	0.38	0.34	0.42	0.48	0.47	0.44		0.42	0.45	0.51	0.39	0.49	0.40	0.32	0.48	0.36	0.42	0.42	0.06
CHAFF/GRAIN	(adjusted)	0.37	0.30	0.24	0.35	0.32	0.36	0.29		0.32	0.32	0.35	0.33	0.34	0.59	0.38	0.36	0.35	0.38	0.35	0.08

COMBINE COLLECTION RESULTS

Flax Field #2 (Fleischbacker)	FULDA									FULDA									
	OCT 1, 2003									OCT 1, 2003									
	WINDROW #1									WINDROW #2									ALL RUNS
RUN #	1	2	3	4	5	6	7	8	Mean	1	2	3	4	5	6	7	8	Mean	Mean	Std Dev
SWATH WIDTH (ft)	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0		24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6			
DISTANCE COUNT	200	200	200	200	200	200	200	200		250	200	200	200	200	200	200	200			
COLLECTION DISTANCE (ft)	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5		43.1	34.5	34.5	34.5	34.5	34.5	34.5	34.5			
STRAW COLLECTION TIME (sec)	17.57	19.59	17.52	19.01	15.06	19.53	18.62	20.09		31.69	22.06	23.15	22.63	20.4	18.65	17.52	15.67			
GRAIN COLLECTION TIME (sec)	16.97	22.17	19.31	22.62	18.96	21.08	21.42	21.18		33.55	23.5	26.49	24.83	21.9	21.2	19.54	17.23			
COLLECTION AREA (sq ft)	862.5	862.5	862.5	862.5	862.5	862.5	862.5	862.5		1067.3	853.9	853.9	853.9	853.9	853.9	853.9	853.9			
COLLECTION AREA (sq m)	80.1	80.1	80.1	80.1	80.1	80.1	80.1	80.1		99.2	79.3	79.3	79.3	79.3	79.3	79.3	79.3			
CHAFF TARE (kg)	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36		2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36			
CHAFF MASS GROSS (kg)	7.05	7.6	7.4	7.9	8.2	8.1	6.9	6.95		11.6	7.6	7.6	8.0	8.2	6.3	6.6	6.7			
CHAFF MASS (kg)	4.69	5.21	5	5.49	5.84	5.72	4.57	4.59		9.25	5.19	5.19	5.59	5.88	3.89	4.22	4.37			
CHAFF MASS (lb)	10.34	11.49	11.02	12.10	12.87	12.61	10.08	10.12		20.39	11.44	11.44	12.32	12.96	8.58	9.30	9.63			
STRAW TARE (kg)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8		4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8			
STRAW MASS GROSS (kg)	15	15.02	15.87	17.36	16.90	18.77	13.52	14.47		31.21	20.35	17.56	17.46	18.16	12.36	13.60	15.15			
STRAW MASS (kg)	10.2	10.22	11.07	12.56	12.1	13.97	8.72	9.67		26.41	15.55	12.76	12.66	13.36	7.56	8.8	10.35			
STRAW MASS (lb)	22.49	22.53	24.40	27.69	26.68	30.80	19.22	21.32		58.22	34.28	28.13	27.91	29.45	16.67	19.40	22.82			
GRAIN MASS (kg)	10.87	12.15	9.8	14.12	16.52	12.74	11.95	10.82		24.03	10.09	14.1	15.7	15.52	10.91	8.92	9.05			
GRAIN MASS (lb)	24.0	26.8	21.6	31.1	36.4	28.1	26.3	23.9		53.0	22.2	31.1	34.6	34.2	24.1	19.7	20.0			
GRAIN MOISTURE (%)	8.3	8.1	8.1	8	7.9	7.8	7.8	8.1	8.0	8.1	8.3	8.5	8.1	8.1	8.1	8.2	8.2	8.2	8.1	0.18
STRAW MOISTURE (%)	11.0	9.9	9.5	16.8	8.4	11.0	9.8	11.0	10.9	12.8	11.9	10.9	11.0	11.1	13.1	10.1	10.2	11.4	11.2	1.9
CHAFF YIELD (t/ha)	0.59	0.65	0.62	0.69	0.73	0.71	0.57	0.57	0.64	0.93	0.65	0.65	0.70	0.74	0.49	0.53	0.55	0.66	0.65	0.11
CHAFF YIELD (lb/ac)	522	580	557	611	650	637	509	511	572	832	584	584	629	661	437	475	491	587	579	95
STRAW YIELD (t/ha)	1.27	1.28	1.38	1.57	1.51	1.74	1.09	1.21	1.38	2.66	1.96	1.61	1.60	1.68	0.95	1.11	1.30	1.61	1.50	0.41
STRAW YIELD (lb/ac)	1136	1138	1233	1398	1347	1555	971	1077	1232	2376	1749	1435	1424	1503	850	990	1164	1436	1334	368
GRAIN YIELD (t/ha)	1.26	1.34	1.11	1.54	1.83	1.47	1.30	1.28	1.39	2.29	1.19	1.55	1.80	1.82	1.21	1.01	1.04	1.49	1.44	0.36
GRAIN YIELD (lb/ac)	1210	1353	1091	1572	1839	1418	1331	1205	1377	2162	1135	1586	1766	1745	1227	1003	1018	1455	1416	333
GRAIN YIELD (bu/ac@56lb/bu	21.6	24.2	19.5	28.1	32.8	25.3	23.8	21.5	24.6	38.6	20.3	28.3	31.5	31.2	21.9	17.9	18.2	26.0	25.29	5.95
MOG/GRAIN	1.37	1.27	1.64	1.28	1.09	1.55	1.11	1.32	1.33	1.48	2.06	1.27	1.16	1.24	1.05	1.46	1.63	1.42	1.37	0.26
STRAW/GRAIN	0.94	0.84	1.13	0.89	0.73	1.10	0.73	0.89	0.91	1.10	1.54	0.90	0.81	0.86	0.69	0.99	1.14	1.00	0.96	0.21
CHAFF/MOG	0.31	0.34	0.31	0.30	0.33	0.29	0.34	0.32	0.32	0.26	0.25	0.29	0.31	0.31	0.34	0.32	0.30	0.30	0.31	0.03
CHAFF/STRAW	0.46	0.51	0.45	0.44	0.48	0.41	0.52	0.47	0.47	0.35	0.33	0.41	0.44	0.44	0.51	0.48	0.42	0.42	0.45	0.05
CHAFF/GRAIN	0.43	0.43	0.51	0.39	0.35	0.45	0.39	0.42	0.42	0.38	0.51	0.37	0.36	0.38	0.36	0.47	0.48	0.41	0.42	0.05
CHAFF MASS (kg) (adjusted)	4.19	4.65	4.46	4.90	5.21	5.11	4.08	4.10		8.26	4.63	4.63	4.99	5.25	3.47	3.77	3.90			
CHAFF MASS (lb) (adjusted)	9.23	10.25	9.84	10.80	11.49	11.26	8.99	9.03		18.20	10.21	10.21	11.00	11.57	7.66	8.31	8.60			
STRAW MASS (kg) (adjusted)	9.11	9.12	9.88	11.21	10.80	12.47	7.78	8.63		23.58	13.88	11.39	11.30	11.93	6.75	7.86	9.24			
STRAW MASS (lb) (adjusted)	20.07	20.11	21.79	24.72	23.81	27.49	17.16	19.03		51.98	30.60	25.11	24.92	26.29	14.88	17.32	20.37			
GRAIN MASS (kg) (adjusted)	9.97	11.17	9.01	12.99	15.21	11.75	11.00	9.94		22.08	9.25	12.90	14.43	14.26	10.03	8.19	8.31			
GRAIN MASS (lb) (adjusted)	21.97	24.62	19.86	28.64	33.54	25.90	24.29	21.92		48.69	20.40	28.44	31.81	31.44	22.10	18.05	18.32			
CHAFF YIELD (t/ha) (adjusted)	0.52	0.58	0.56	0.61	0.65	0.64	0.51	0.51	0.57	0.83	0.58	0.58	0.63	0.66	0.44	0.47	0.49	0.59	0.58	0.09
CHAFF YIELD (lb/ac) (adjusted)	466	518	497	546	580	569	454	456	511	743	521	521	561	590	391	424	439	524	517	85
STRAW YIELD (t/ha) (adjusted)	1.14	1.14	1.23	1.40	1.35	1.56	0.97	1.08	1.23	2.38	1.75	1.44	1.42	1.50	0.85	0.99	1.16	1.44	1.33	0.37
STRAW YIELD (lb/ac) (adjusted)	1014	1016	1100	1248	1203	1389	867	961	1100	2121	1561	1281	1271	1341	759	884	1039	1282	1191	328
GRAIN YIELD (t/ha) (adjusted)	1.24	1.39	1.12	1.62	1.90	1.47	1.38	1.24	1.42	2.23	1.17	1.63	1.82	1.80	1.26	1.03	1.05	1.50	1.46	0.34
GRAIN YIELD (lb/ac) (adjusted)	1110	1243	1003	1446	1694	1308	1227	1107	1267	1987	1041	1451	1623	1604	1128	921	934	1336	1302	307
									1.81									2.02	1.91	0.46
									1610									1806	1708	407
MOG/GRAIN (adjusted)	1.33	1.25	1.69	1.24	1.05	1.50	1.10	1.28	1.29	1.44	2.00	1.24	1.13	1.20	1.02	1.42	1.58	1.38	1.33	0.25
STRAW/GRAIN (adjusted)	0.91	0.82	1.10	0.86	0.71	1.06	0.71	0.87	0.88	1.07	1.50	0.88	0.78	0.84	0.67	0.96	1.11	0.98	0.93	0.21
CHAFF/MOG (adjusted)	0.31	0.34	0.31	0.30	0.33	0.29	0.34	0.32	0.32	0.26	0.25	0.29	0.31	0.31	0.34	0.32	0.30	0.30	0.31	0.03
CHAFF/STRAW (adjusted)	0.46	0.51	0.45	0.44	0.48	0.41	0.52	0.47	0.47	0.35	0.33	0.41	0.44	0.44	0.51	0.48	0.42	0.42	0.45	0.05
CHAFF/GRAIN (adjusted)	0.42	0.42	0.50	0.36	0.34	0.43	0.37	0.41	0.41	0.37	0.50	0.36	0.35	0.37	0.35	0.46	0.47	0.40	0.41	0.05

COMBINE COLLECTION RESULTS

Flax Field #3 (Rinz)		MUENSTER									SEP 29, 2003										
		WINDROW #3									MUENSTER								SEP 29, 2003	ALL RUNS	
RUN #		1	2	3	4	5	6	7	8	Mean	WINDROW #1 1	2	3	4	5	6	7	8	Mean	Mean	Std Dev
SWATH WIDTH (ft)		28.8	28.8	28.8	28.8	28.8	28.8	28.8			29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0			
DISTANCE COUNT		250	250	250	250	250	250	250			250	250	250	250	250	250	250	250			
COLLECTION DISTANCE (ft)		43.1	43.1	43.1	43.1	43.1	43.1	43.1			43.1	43.1	43.1	43.1	43.1	43.1	43.1	43.1			
STRAW COLLECTION TIME (sec)		31.29	27.76	27.06	21.65	28.44	25.1	30.71			28.35	25.99	24.68	21.65	22	24.09	22.66	23.1			
GRAIN COLLECTION TIME (sec)		33.4	32.96	30.18	24.45	31.87	27.21	33.19			32.43	27.67	26.61	23.63	24.99	27.09	24.66	38.41			
COLLECTION AREA (sq ft)		1239.8	1239.8	1239.8	1239.8	1239.8	1239.8	1239.8			1250.6	1250.6	1250.6	1250.6	1250.6	1250.6	1250.6	1250.6			
COLLECTION AREA (sq m)		115.2	115.2	115.2	115.2	115.2	115.2	115.2			116.2	116.2	116.2	116.2	116.2	116.2	116.2	116.2			
CHAFF TARE (kg)		2	2	2	2	2	2	2			2	2	2	2	2	2	2	2			
CHAFF MASS GROSS (kg)		8.7	7.9	9.3	6.7	10.7	8.3	7.0			8.1	8.8	6.5	6.2	8.7	8.8	6.6	6.9			
CHAFF MASS (kg)		6.7	5.9	7.3	4.73	8.7	6.3	5			6.1	6.83	4.46	4.2	6.68	6.82	4.6	4.85			
CHAFF MASS (lb)		14.77	13.01	16.09	10.43	19.18	13.89	11.02			13.45	15.06	9.83	9.26	14.73	15.04	10.14	10.69			
STRAW TARE (kg)		4.74	4.74	4.74	4.74	4.74	4.74	4.74			4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74			
STRAW MASS GROSS (kg)		19.1	18.60	24.35	16.26	24.94	23.25	20.00			20.13	22.07	16.40	13.04	22.67	16.78	15.26	15.27			
STRAW MASS (kg)		14.36	13.86	19.61	11.52	20.2	18.51	15.26			15.39	17.33	11.66	8.3	17.93	12.04	10.52	10.53			
STRAW MASS (lb)		31.66	30.56	43.23	25.40	44.53	40.81	33.64			33.93	38.21	25.71	18.30	39.53	26.54	23.19	23.21			
GRAIN MASS (kg)		14.88	19.22	20.95	15.05	25.21	19.21	13.82			17.6	16.25	15.52	14.78	19.08	18.6	14.63	24.7			
GRAIN MASS (lb)		32.8	42.4	46.2	33.2	55.6	42.4	30.5			38.8	35.8	34.2	32.6	42.1	41.0	32.3	54.5			
GRAIN MOISTURE (%)		9.7	9.8	9.6	9.4	9.5	9.6	9.8		9.6	9.3	9.3	9.4	9.3	9.2	9.3	9.4	9.4	9.3	9.5	0.19
STRAW MOISTURE (%)		14.8	14.9	15.1	14.4	12.2	11.4	12.7		13.6	11.5	11.6	12.2	10.7	10.4	11.0	11.8	11.4	11.3	12.4	1.6
CHAFF YIELD (t/ha)		0.58	0.51	0.63	0.41	0.76	0.55	0.43		0.55	0.53	0.59	0.38	0.36	0.57	0.59	0.40	0.42	0.48	0.51	0.11
CHAFF YIELD (lb/ac)		519	457	565	366	674	488	387		494	468	524	342	323	513	524	353	372	428	456	99
STRAW YIELD (t/ha)		1.25	1.20	1.70	1.00	1.75	1.61	1.32		1.41	1.32	1.49	1.00	0.71	1.54	1.04	0.91	0.91	1.12	1.26	0.32
STRAW YIELD (lb/ac)		1112	1074	1519	892	1565	1434	1182		1254	1182	1331	895	637	1377	925	808	809	995	1116	286
GRAIN YIELD (t/ha)		1.21	1.41	1.63	1.17	1.95	1.54	1.11		1.43	1.32	1.31	1.24	1.17	1.45	1.42	1.16	1.28	1.29	1.36	0.22
GRAIN YIELD (lb/ac)		1153	1489	1623	1166	1953	1488	1070		1420	1351	1248	1192	1135	1465	1428	1123	1897	1355	1385	275
GRAIN YIELD (bu/ac)@56lb/bu		20.6	26.6	29.0	20.8	34.9	26.6	19.1		25.4	24.1	22.3	21.3	20.3	26.2	25.5	20.1	33.9	24.2	24.74	4.91
MOG/GRAIN		1.42	1.03	1.28	1.08	1.15	1.29	1.47		1.24	1.22	1.49	1.04	0.85	1.29	1.01	1.03	0.62	1.07	1.15	0.24
STRAW/GRAIN		0.97	0.72	0.94	0.77	0.80	0.96	1.10		0.89	0.87	1.07	0.75	0.56	0.94	0.65	0.72	0.43	0.75	0.82	0.19
CHAFF/MOG		0.32	0.30	0.27	0.29	0.30	0.25	0.25		0.28	0.28	0.28	0.28	0.28	0.34	0.27	0.36	0.30	0.32	0.30	0.29	0.03
CHAFF/STRAW		0.47	0.43	0.37	0.41	0.43	0.34	0.33		0.40	0.40	0.39	0.38	0.51	0.37	0.57	0.44	0.46	0.44	0.42	0.06
CHAFF/GRAIN		0.45	0.31	0.35	0.31	0.35	0.33	0.36		0.35	0.35	0.42	0.29	0.28	0.35	0.37	0.31	0.20	0.32	0.33	0.06
CHAFF MASS (kg)	(adjusted)	5.94	5.23	6.47	4.19	7.72	5.59	4.43			5.41	6.06	3.96	3.72	5.92	6.05	4.08	4.30			
CHAFF MASS (lb)	(adjusted)	13.10	11.54	14.27	9.25	17.01	12.32	9.78			11.93	13.35	8.72	8.21	13.06	13.33	8.99	9.48			
STRAW MASS (kg)	(adjusted)	12.73	12.29	17.39	10.22	17.91	16.42	13.53			13.65	15.37	10.34	7.36	15.90	10.68	9.33	9.34			
STRAW MASS (lb)	(adjusted)	28.08	27.10	38.34	22.52	39.49	36.19	29.83			30.09	33.88	22.80	16.23	35.05	23.54	20.57	20.59			
GRAIN MASS (kg)	(adjusted)	13.44	17.34	18.94	13.64	22.82	17.37	12.47			15.96	14.74	14.06	13.41	17.32	16.87	13.25	22.38			
GRAIN MASS (lb)	(adjusted)	29.62	38.22	41.75	30.06	50.30	38.28	27.48			35.19	32.49	31.00	29.55	38.19	37.19	29.22	49.33			
CHAFF YIELD (t/ha)	(adjusted)	0.52	0.45	0.56	0.36	0.67	0.49	0.38		0.49	0.47	0.52	0.34	0.32	0.51	0.52	0.35	0.37	0.42	0.46	0.10
CHAFF YIELD (lb/ac)	(adjusted)	460	405	501	325	598	433	343		438	415	465	304	286	455	464	313	330	379	407	88
STRAW YIELD (t/ha)	(adjusted)	1.11	1.07	1.51	0.89	1.56	1.43	1.17		1.25	1.17	1.32	0.89	0.63	1.37	0.92	0.80	0.80	0.99	1.11	0.28
STRAW YIELD (lb/ac)	(adjusted)	986	952	1347	791	1388	1271	1048		1112	1048	1180	794	565	1221	820	716	717	883	990	253
GRAIN YIELD (t/ha)	(adjusted)	1.17	1.51	1.64	1.18	1.98	1.51	1.08		1.44	1.37	1.27	1.21	1.15	1.49	1.45	1.14	1.93	1.38	1.41	0.28
GRAIN YIELD (lb/ac)	(adjusted)	1041	1343	1467	1056	1767	1345	966		1283	1226	1132	1080	1029	1330	1295	1018	1718	1229	1254	249
[redacted]										1.74									1.41	1.57	0.37
[redacted]										1550									1262	1396	330
MOG/GRAIN	(adjusted)	1.59	1.01	1.28	1.08	1.12	1.27	1.44		1.22	1.19	1.45	1.02	0.83	1.26	0.99	1.01	0.61	1.05	1.13	0.23
STRAW/GRAIN	(adjusted)	0.95	0.71	0.93	0.76	0.79	0.95	1.09		0.88	0.86	1.04	0.74	0.55	0.92	0.63	0.70	0.42	0.73	0.80	0.18
CHAFF/MOG	(adjusted)	0.32	0.30	0.27	0.29	0.30	0.25	0.25		0.28	0.28	0.28	0.28	0.28	0.34	0.27	0.36	0.30	0.32	0.30	0.29	0.03
CHAFF/STRAW	(adjusted)	0.47	0.43	0.37	0.41	0.43	0.34	0.33		0.40	0.40	0.39	0.38	0.51	0.37	0.57	0.44	0.46	0.44	0.42	0.06
CHAFF/GRAIN	(adjusted)	0.44	0.31	0.34	0.31	0.34	0.32	0.36		0.34	0.34	0.41	0.28	0.28	0.34	0.36	0.31	0.19	0.31	0.33	0.06

COMBINE COLLECTION RESULTS

Flax - Field #3 (Hinz)		MUENSTER							SEP 29, 2003		MUENSTER								SEP 29, 2003		
		WINDROW #3									WINDROW #8									ALL RUNS	
RUN #		1	2	3	4	5	6	7	8	Mean	1	2	3	4	5	6	7	8	Mean	Mean	Std Dev
SWATH WIDTH (ft)		28.8	28.8	28.8	28.8	28.8	28.8	28.8			29.0	29.0	29.0	29.0	29.0	29.0	29.0	29.0			
DISTANCE COUNT		250	250	250	250	250	250	250			250	250	250	250	250	250	250	250			
COLLECTION DISTANCE (ft)		43.1	43.1	43.1	43.1	43.1	43.1	43.1			43.1	43.1	43.1	43.1	43.1	43.1	43.1	43.1			
STRAW COLLECTION TIME (sec)		31.29	27.76	27.06	21.85	28.44	25.1	30.71			28.35	25.99	24.88	21.65	22	24.09	22.86	23.1			
GRAIN COLLECTION TIME (sec)		33.4	32.96	30.18	24.45	31.87	27.21	33.19			32.43	27.67	26.81	23.63	24.99	27.09	24.86	38.41			
COLLECTION AREA (sq ft)		1239.8	1239.8	1239.8	1239.8	1239.8	1239.8	1239.8			1250.6	1250.6	1250.6	1250.6	1250.6	1250.6	1250.6	1250.6			
COLLECTION AREA (sq m)		115.2	115.2	115.2	115.2	115.2	115.2	115.2			116.2	116.2	116.2	116.2	116.2	116.2	116.2	116.2			
CHAFF TARE (kg)		2	2	2	2	2	2	2			2	2	2	2	2	2	2	2			
CHAFF MASS GROSS (kg)		8.7	7.9	9.3	6.7	10.7	8.3	7.0			8.1	8.8	6.5	6.2	8.7	8.8	6.6	6.9			
CHAFF MASS (kg)		6.7	5.9	7.3	4.73	8.7	6.3	5			6.1	6.83	4.46	4.2	6.68	6.82	4.6	4.85			
CHAFF MASS (lb)		14.77	13.01	16.09	10.43	19.18	13.89	11.02			13.45	15.06	9.83	9.26	14.73	15.04	10.14	10.69			
STRAW TARE (kg)		4.74	4.74	4.74	4.74	4.74	4.74	4.74			4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74			
STRAW MASS GROSS (kg)		19.1	18.60	24.35	16.26	24.94	23.25	20.00			20.13	22.07	16.40	13.04	22.67	16.78	15.26	15.27			
STRAW MASS (kg)		14.36	13.86	19.61	11.52	20.2	18.51	15.26			15.39	17.33	11.66	8.3	17.93	12.04	10.52	10.53			
STRAW MASS (lb)		31.66	30.56	43.23	25.40	44.53	40.81	33.64			33.93	38.21	25.71	18.30	39.53	26.54	23.19	23.21			
GRAIN MASS (kg)		14.88	19.22	20.95	15.05	25.21	19.21	13.82			17.6	16.25	15.52	14.78	19.08	18.6	14.63	24.7			
GRAIN MASS (lb)		32.8	42.4	46.2	33.2	55.6	42.4	30.5			38.8	35.8	34.2	32.6	42.1	41.0	32.3	54.5			
GRAIN MOISTURE (%)		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		9.6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	9.9	9.5	0.19
STRAW MOISTURE (%)		14.8	14.0	15.1	14.4	12.6	10.4	12.8		13.6	10.5	11.1	11.1	10.2	11.1	11.1	11.1	11.2	11.3	12.4	1.8
CHAFF YIELD (t/ha)		0.58	0.51	0.63	0.41	0.76	0.55	0.43		0.55	0.53	0.59	0.38	0.36	0.57	0.59	0.40	0.42	0.48	0.51	0.11
CHAFF YIELD (lb/ac)		519	457	565	366	674	488	387		493	468	524	342	323	513	524	353	372	428	458	99
STRAW YIELD (t/ha)		1.25	1.20	1.70	1.00	1.75	1.61	1.32		1.41	1.32	1.49	1.00	0.71	1.54	1.04	0.91	0.91	1.17	1.25	0.32
STRAW YIELD (lb/ac)		1112	1074	1519	892	1565	1434	1182		1354	1182	1331	895	637	1377	925	808	809	1044	1116	288
GRAIN YIELD (t/ha)		1.21	1.41	1.63	1.17	1.95	1.54	1.11		1.43	1.32	1.31	1.24	1.17	1.45	1.42	1.16	1.28	1.31	1.36	0.22
GRAIN YIELD (lb/ac)		1153	1489	1623	1166	1953	1488	1070		1420	1351	1248	1192	1135	1465	1428	1123	1897	1355	1385	274
GRAIN YIELD (bu/ac)@56lb/bu		20.6	26.6	29.0	20.8	34.9	26.6	19.1		25	24.1	22.3	21.3	20.3	26.2	25.5	20.1	33.9	24.1	24.74	4.91
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		1.24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.07	1.15	0.24
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		0.89	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.78	0.82	0.19
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		0.29	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.30	0.29	0.03
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		0.41	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.44	0.42	0.09
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		0.35	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.37	0.33	0.03
CHAFF MASS (kg)	(adjusted)	5.84	5.23	6.47	4.19	7.73	5.69	4.49			5.41	6.06	3.96	3.72	5.92	6.05	4.08	4.30			
CHAFF MASS (lb)	(adjusted)	12.90	11.54	14.27	9.25	17.01	12.57	9.78			11.93	13.35	8.72	8.21	13.06	13.33	8.99	9.48			
STRAW MASS (kg)	(adjusted)	12.73	12.29	17.39	10.22	17.91	16.42	13.53			13.65	15.37	10.34	7.36	15.90	10.68	9.33	9.34			
STRAW MASS (lb)	(adjusted)	28.08	27.10	38.34	22.52	39.49	36.19	29.83			30.09	33.88	22.80	16.23	35.05	23.54	20.57	20.59			
GRAIN MASS (kg)	(adjusted)	13.44	17.34	18.94	13.64	22.82	17.37	12.47			15.96	14.74	14.06	13.41	17.32	16.87	13.25	22.38			
GRAIN MASS (lb)	(adjusted)	29.62	38.22	41.75	30.06	50.30	38.28	27.48			35.19	32.49	31.00	29.55	38.19	37.19	29.22	49.33			
CHAFF YIELD (t/ha)	(adjusted)	0.82	0.45	0.58	0.38	0.67	0.49	0.39		0.54	0.47	0.57	0.34	0.32	0.51	0.52	0.36	0.37	0.42	0.46	0.10
CHAFF YIELD (lb/ac)	(adjusted)	460	405	521	337	598	433	343		485	416	466	304	286	455	464	319	330	375	407	86
STRAW YIELD (t/ha)	(adjusted)	1.11	1.07	1.51	0.89	1.56	1.43	1.17		1.25	1.17	1.32	0.89	0.63	1.37	0.92	0.80	0.80	1.01	1.11	0.26
STRAW YIELD (lb/ac)	(adjusted)	986	952	1347	791	1388	1271	1048		1112	1043	1180	794	565	1221	820	716	717	894	990	232
GRAIN YIELD (t/ha)	(adjusted)	1.17	1.51	1.64	1.18	1.98	1.51	1.08		1.44	1.37	1.27	1.21	1.15	1.49	1.45	1.14	1.93	1.40	1.41	0.28
GRAIN YIELD (lb/ac)	(adjusted)	1041	1343	1467	1056	1767	1345	966		1283	1226	1132	1080	1029	1330	1295	1018	1718	1254	1254	250
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		1.24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.07	1.57	0.31
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		1.24	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.07	1396	278
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		0.89	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.78	1.13	0.24
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		0.29	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.30	0.80	0.19
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		0.41	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.44	0.29	0.03
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		0.35	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.37	0.42	0.09
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		0.35	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.37	0.33	0.03

Appendix III

Field Data

FIELD TEST PLOT RESULTS

FLAX				DIXON - Field #1						SEPTEMBER 2003	
SWATH #	1	2	3	4	5	6	7	8	9		
COMBINE OPERATION											
BALING OPERATION	SQUARE	SQUARE		SQUARE			SQUARE		SQUARE		
BALING DATE	1-Oct	6-Oct	26-Sep	26-Sep	26-Sep	26-Sep	26-Sep	26-Sep	27-Sep		
SWATH WIDTH(m)	7.8486	7.89432	7.90956	7.83336	7.94004	7.94766	7.74192	7.80288	8.59536		
SWATH WIDTH(ft)	25.75	25.9	25.95	25.7	26.05	26.075	25.4	25.6	28.2		
SWATH LENGTH(m)	384.0	384.0	365.2	362.1	361.5	384.0	384.0	384.0	384.0		
SWATH LENGTH(ft)	1260	1260	1198	1188	1186	1260	1260	1260	1260		
AREA HARVESTED (hectares)	0.30	0.30	0.29	0.28	0.29	0.31	0.30	0.30	0.33		
AREA HARVESTED (acres)	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.8		
NUMBER OF BALES	35.5	30		39.5			39		44.33	Mean	Std Dev
STRAW MOISTURE (%)										10.5	2.2
BALE MASS (kg)	325.0	345.0	348.0	387.0	373.0	392.0	392.0	373.0	369.0		
BALE MASS (lb)	716.5	760.6	767.2	853.2	822.3	864.2	864.2	822.3	813.5		
STRAW YIELD (t/ha)	1.08	1.14	1.20	1.36	1.30	1.28	1.32	1.24	1.12	1.2	0.10
STRAW YIELD (t/ha from collections)										1.2	0.06
STRAW YIELD (lb/ac)	962	1015	1075	1217	1159	1146	1176	1111	997	1128	88
GRAIN MOISTURE (%)										10.0	0.1
GRAIN MASS (kg)	440	417		386	372	454	404		426		
GRAIN MASS (lb)	970.0	920.0		850.0	820.0	1000.0	890.0		940.0		
GRAIN YIELD (t/ha)	1.46	1.38		1.36	1.30	1.49	1.36		1.29	1.38	0.07
GRAIN YIELD (lb/ac)	1302	1228		1213	1156	1326	1211		1152	1227	66
GRAIN YIELD (bu/ac @ 56 lb/bu)	23	22		22	21	24	22		21	21.9	1.2
GRAIN YIELD (bu/ac from collections)			25					22		23.5	
										0.09	0.10
BALE MASS (kg) - Adjusted	296	312	320	340	320	342	359	329	336		
BALE MASS (lb) - Adjusted	651.8	687	705	749	706	755	792	726	742		
GRAIN MASS (Kg) - Adjusted	396	376		348	335	407	363		384		
GRAIN MASS (lb) - Adjusted	874	829		767	739	898	799		846		
STRAW YIELD (t/ha) - Adjusted	0.98	1.03	1.11	1.20	1.12	1.12	1.21	1.10	1.02	1.1	0.08
STRAW YIELD (t/ha) - Adjusted (from collections)										1.1	
STRAW YIELD (lb/ac) -Adjusted	875	917	988	1069	996	1001	1077	980	909	1006	69
GRAIN YIELD (t/ha) - Adjusted	1.32	1.24		1.23	1.17	1.33	1.22		1.16	1.24	0.07
GRAIN YIELD (t/ha) - Adjusted (from collections)			1.41					1.26		1.3	
GRAIN YIELD (lb/ac) - Adjusted	1173	1106		1094	1042	1191	1088		1037	1106	59
										0.08	0.09

FIELD TEST PLOT RESULTS

FLAX — FULDA - Field #2 — OCTOBER 2003

SWATH #	1	2	3	4	5	6	7	8	9		
COMBINE OPERATION											
BALING OPERATION	SQUARE	SQUARE		SQUARE			SQUARE		SQUARE		
BALING DATE	6-Oct	10-Oct	1-Oct	1-Oct	1-Oct	1-Oct	1-Oct	1-Oct	2-Oct		
SWATH WIDTH(m)	7 3152	7 6962	7 62	7 5438	7 5438	7 6962	7 62	7 5438	7 6962		
SWATH WIDTH(ft)	24	25 25	25	24 75	24 75	25 25	25	24 75	25 25		
SWATH LENGTH(m)	571 5	571 5	571 5	571 5	571 5	571 5	571 5	571 5	571 5		
SWATH LENGTH (ft)	1875	1875	1875	1875	1875	1875	1875	1875	1875		
AREA HARVESTED (hectares)	0 42	0 44	0 44	0 43	0 43	0 44	0 44	0 43	0 44		
AREA HARVESTED (acres)	1 0	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1		
NUMBER OF BALES	54	49		48			50 5		52 5	Mean	Std Dev
BALED STRAW MOISTURE (%)										10 0	1 8
BALE MASS (kg)	525.0	492.0	548.0	509.0	521.0	601.0	560.0	555.0	576.0		
BALE MASS (lb)	1157.4	1084.7	1208.1	1122.2	1148.6	1325.0	1234.6	1223.6	1269.9		
STRAW YIELD (t/ha)	1.26	1.12	1.26	1.18	1.21	1.37	1.29	1.29	1.31	1 9	0 07
STRAW YIELD (t/ha from collections)										1 5	0 16
STRAW YIELD (lb/ac)	1120	998	1123	1053	1078	1219	1147	1149	1168	1136	66
GRAIN YIELD (%)										8 2	0 5
GRAIN MASS (Kg)	599	585		562	585	572	590		572		
GRAIN MASS (lb)	1320 0	1290 0		1240 0	1290 0	1260 0	1300 0		1260 0		
GRAIN YIELD (t/ha)	1 43	1 33		1 30	1 36	1 30	1 35		1 30	1 34	0 05
GRAIN YIELD (lb/ac)	1278	1187		1164	1211	1159	1208		1159	1195	43
GRAIN YIELD (bu/ac@ 56 lb/bu)	23	21		21	22	21	22		21	21 3	0 8
GRAIN YIELD (bu/ac from collections)			25					26		25 5	
										0 95	0 08
										1 0	
BALE MASS (kg) - Adjusted	476	445	500	456	469	514	514	504	520		
BALE MASS (lb) - Adjusted	1050	981	1102	1006	1034	1134	1133	1110	1146		
GRAIN MASS (kg) - Adjusted	553	541		518	539	523	536		522		
GRAIN MASS (lb) - Adjusted	1220	1192		1142	1189	1153	1182		1150		
STRAW YIELD (t/ha)-Adjusted	1 14	1 01	1 15	1 06	1 09	1 17	1 16	1 17	1 18	1 14	0 06
STRAW YIELD (t/ha)-Adjusted (from collections)										1 5	
STRAW YIELD (lb/ac)- Adjusted	1016	903	1024	944	970	1044	1053	1042	1054	1021	54
GRAIN YIELD (t/ha) - Adjusted	1 32	1 23		1 20	1 25	1 19	1 23		1 19	1 23	0 05
GRAIN YIELD (t/ha from collections)			1 42					1 50		1 46	
GRAIN YIELD (lb/ac) - Adjusted	1181	1097		1072	1116	1061	1098		1058	1097	42
										0 91	0 07

FIELD TEST PLOT RESULTS

FLAX — DIXON Field #1 — SEPTEMBER 2003

SWATH #	1	2	3	4	5	6	7	8	9		
COMBINE OPERATION	CONV.	CONV.	REF (conv)	CONV.	CONV.	[redacted]		REF (conv)	[redacted]		
BALING OPERATION	SQUARE	SQUARE	[redacted]	SQUARE	[redacted]	[redacted]	SQUARE	[redacted]	SQUARE		
BALING DATE	1-Oct	6-Oct	26-Sep	26-Sep	26-Sep	26-Sep	26-Sep	26-Sep	27-Sep		
SWATH WIDTH(m)	7.8486	7.89432	7.90956	7.83336	7.94004	7.94766	7.74192	7.80288	8.59536		
SWATH WIDTH(ft)	25.75	25.9	25.95	25.7	26.05	26.075	25.4	25.6	28.2		
SWATH LENGTH(m)	384.0	384.0	366.2	362.1	361.5	384.0	384.0	384.0	384.0		
SWATH LENGTH(ft)	1260	1260	1198	1188	1186	1260	1260	1260	1260		
AREA HARVESTED (hectares)	0.30	0.30	0.29	0.28	0.29	0.31	0.30	0.30	0.33		
AREA HARVESTED (acres)	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.8		
NUMBER OF BALES	35.5	30	[redacted]	39.5	[redacted]	[redacted]	39	[redacted]	44.33	Mean	Std Dev
STRAW MOISTURE (%)	9.0	9.7	8.1	12.2	14.1	12.6	8.4	11.7	8.8	10.5	2.2
BALE MASS (kg)	325.0	345.0	348.0	387.0	373.0	392.0	392.0	373.0	369.0		
BALE MASS (lb)	716.5	760.6	767.2	853.2	822.3	864.2	864.2	822.3	813.5		
STRAW YIELD (t/ha)	1.08	1.14	1.20	1.36	1.30	1.28	1.32	1.24	1.12	1.2	0.10
STRAW YIELD (t/ha from collections)			1.19					1.28		1.2	0.06
STRAW YIELD (lb/ac)	962	1015	1075	1217	1159	1146	1176	1111	997	1126	88
GRAIN MOISTURE (%)	9.9	9.9	9.9	9.8	9.9	10.2	10.2	9.9	10.0	10.0	0.1
GRAIN MASS (kg)	440	417		386	372	454	404		426		
GRAIN MASS (lb)	970.0	920.0		850.0	820.0	1000.0	890.0		940.0		
GRAIN YIELD (t/ha)	1.46	1.38		1.36	1.30	1.49	1.36		1.29	1.38	0.07
GRAIN YIELD (lb/ac)	1302	1228		1213	1156	1326	1211		1152	1227	66
GRAIN YIELD (bu/ac @ 56 lb/bu)	23	22		22	21	24	22		21	21.9	1.2
GRAIN YIELD (bu/ac from collections)			25					22		23.6	
STRAW / GRAIN RATIO	0.74	0.83	[redacted]	1.00	1.00	0.86	0.97	[redacted]	0.87	0.90	0.10
STRAW / GRAIN RATIO (from collections)										0.8	
BALE MASS (kg) - Adjusted	296	312	320	340	320	342	359	329	336		
BALE MASS (lb) - Adjusted	651.8	687	705	749	706	755	792	726	742		
GRAIN MASS (Kg) - Adjusted	396	376		348	335	407	363		384		
GRAIN MASS (lb) - Adjusted	874	829		767	739	898	799		846		
STRAW YIELD (t/ha) - Adjusted	0.98	1.03	1.11	1.20	1.12	1.12	1.21	1.10	1.02	1.10	0.08
STRAW YIELD (t/ha) - Adjusted (from collections)			1.06					1.13		1.09	
STRAW YIELD (lb/ac) -Adjusted	875	917	988	1069	996	1001	1077	980	909	979	69
GRAIN YIELD (t/ha) - Adjusted	1.32	1.24		1.23	1.17	1.33	1.22		1.16	1.24	0.07
GRAIN YIELD (t/ha) - Adjusted (from collections)			1.41					1.26		1.33	
GRAIN YIELD (lb/ac) - Adjusted	1173	1106		1094	1042	1191	1088		1037	1104	59
STRAW / GRAIN RATIO Adjusted	0.75	0.83	[redacted]	0.98	0.96	0.84	0.99	[redacted]	0.88	0.89	0.09
STRAW / GRAIN RATIO - Adjusted (from collections)										0.83	

FIELD TEST PLOT RESULTS

FLAX — FULDA Field #2 — OCTOBER 2003

SWATH #	1	2	3	4	5	6	7	8	9		
COMBINE OPERATION	CONV.	CONV.	REF (conv)	CONV.	CONV.			REF(conv)			
BALING OPERATION	SQUARE	SQUARE	ROUND	SQUARE	ROUND	ROUND	SQUARE	ROUND	SQUARE		
BALING DATE	6 Oct	10 Oct	1 Oct	1 Oct	1 Oct	1 Oct	1 Oct	1 Oct	2 Oct		
SWATH WIDTH(m)	7.3152	7.6962	7.62	7.5438	7.5438	7.6962	7.62	7.5438	7.6962		
SWATH WIDTH(ft)	24	25.25	25	24.75	24.75	25.25	25	24.75	25.25		
SWATH LENGTH(m)	571.5	571.5	571.5	571.5	571.5	571.5	571.5	571.5	571.5		
SWATH LENGTH (ft)	1875	1875	1875	1875	1875	1875	1875	1875	1875		
AREA HARVESTED (hectares)	0.42	0.44	0.44	0.43	0.43	0.44	0.44	0.43	0.44		
AREA HARVESTED (acres)	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1		
NUMBER OF BALES	54	49	[redacted]	48	[redacted]	[redacted]	50.5	[redacted]	52.5	Mean	Std Dev
BALED STRAW MOISTURE (%)	9.3	9.5	8.8	10.4	10.0	14.4	8.2	9.3	9.8	10.0	1.8
BALE MASS (kg)	525.0	492.0	548.0	509.0	521.0	601.0	560.0	555.0	576.0		
BALE MASS (lb)	1157.4	1084.7	1208.1	1122.2	1148.6	1325.0	1234.6	1223.6	1269.9		
STRAW YIELD (t/ha)	1.26	1.12	1.26	1.18	1.21	1.37	1.29	1.29	1.31	1.3	0.07
STRAW YIELD (t/ha from collections)			1.38					1.61		1.5	0.16
STRAW YIELD (lb/ac)	1120	998	1123	1053	1078	1219	1147	1149	1168	1135	66
GRAIN MOISTURE (%)	7.6	7.6	8.0	7.9	7.8	8.5	9.1	8.2	8.7	8.2	0.5
GRAIN MASS (Kg)	599	585		562	585	572	590		572		
GRAIN MASS (lb)	1320.0	1290.0		1240.0	1290.0	1260.0	1300.0		1260.0		
GRAIN YIELD (t/ha)	1.43	1.33		1.30	1.36	1.30	1.35		1.30	1.34	0.05
GRAIN YIELD (lb/ac)	1278	1187		1164	1211	1159	1208		1159	1195	43
GRAIN YIELD (bu/acre 56 lb/bu)	23	21		21	22	21	22		21	21.3	0.8
GRAIN YIELD (bu/ac from collections)			25					26		26.3	
STRAW / GRAIN RATIO	0.88	0.84		0.90	0.89	1.05	0.95		1.01	0.93	0.08
STRAW / GRAIN RATIO (from collections)			[redacted]					[redacted]		1.0	
BALE MASS (kg) - Adjusted	476	445	500	456	469	514	514	504	520		
BALE MASS (lb) - Adjusted	1050	981	1102	1006	1034	1134	1133	1110	1146		
GRAIN MASS (kg) - Adjusted	553	541		518	539	523	536		522		
GRAIN MASS (lb) - Adjusted	1220	1192		1142	1189	1153	1182		1150		
STRAW YIELD (t/ha)-Adjusted	1.14	1.01	1.15	1.06	1.09	1.17	1.18	1.17	1.18	1.13	0.06
STRAW YIELD (t/ha)-Adjusted (from collections)			1.2					1.4		1.33	
STRAW YIELD (lb/ac)- Adjusted	1016	903	1024	944	970	1044	1053	1042	1054	1006	54
GRAIN YIELD (t/ha) - Adjusted	1.32	1.23		1.20	1.25	1.19	1.23		1.19	1.23	0.05
GRAIN YIELD (t/ha from collections)			1.42					1.50		1.46	
GRAIN YIELD (lb/ac) - Adjusted	1181	1097		1072	1116	1061	1098		1058	1098	42
STRAW / GRAIN RATIO - Adjusted	0.86	0.82		0.88	0.87	0.98	0.96		1.00	0.91	0.07
STRAW / GRAIN RATIO - Adjusted (from collections)			[redacted]					[redacted]		0.93	

FIELD TEST PLOT RESULTS

MAX — MUENSTER - Field #3 — SEPTEMBER 2003

SWATH #	1	2	3	4	5	6	7	8	9		
COMBINE TYPE	CONV.	CONV.	REF (conv)	CONV.	CONV.	[redacted]	[redacted]	REF (conv)	[redacted]		
BALE TYPE	SQUARE	SQUARE	[redacted]	SQUARE	[redacted]	[redacted]	SQUARE	[redacted]	SQUARE		
BALING DATE	4-Oct	9-Oct	29-Sep	29-Sep	29-Sep	29-Sep	29-Sep	29-Sep	30-Sep		
SWATH WIDTH (m)	8.382	8.763	8.763	8.763	8.6868	8.6106	8.763	8.6392	8.763		
SWATH WIDTH (ft)	27.5	28.75	28.75	28.75	28.5	28.25	28.75	29	28.75		
SWATH LENGTH (m)	579.1	579.1	579.1	579.1	579.1	579.1	579.1	579.1	579.1		
SWATH LENGTH (ft)	1900	1900	1900	1900	1900	1900	1900	1900	1900		
AREA HARVESTED (hectares)	0.49	0.51	0.51	0.51	0.50	0.50	0.51	0.51	0.51		
AREA HARVESTED (acres)	1.2	1.3	1.3	1.3	1.2	1.2	1.3	1.3	1.3		
NUMBER OF BALES	34	39.3	[redacted]	45	[redacted]	[redacted]	42	[redacted]	39	Mean	Std Dev
STRAW MOISTURE (%)	8.6	10.8	10.0	9.5	9.3	11.1	7.6	7.5	10.8	9.3	1.3
BALE MASS (Kg)	422.0	469.0	541.0	494.0	437.0	459.0	445.0	512.0	510.0		
BALE MASS (lb)	930.4	1034.0	1192.7	1089.1	963.4	1011.9	981.1	1128.8	1124.4		
STRAW YIELD (t/ha)	0.87	0.92	1.07	0.97	0.87	0.92	0.88	1.00	1.00	0.94	0.07
STRAW YIELD (t/ha from collections)			1.41					1.12		1.26	
STRAW YIELD (lb/ac)	776	825	951	868	775	821	782	892	897	846	66
GRAIN MOISTURE (%)	9.0	9.1	9.6	9.1	9.3	9.1	9.2	9.3	8.9	9.2	0.21
GRAIN MASS (Kg)	680	685		676	594	562	599		640		
GRAIN MASS (lb)	1500.0	1510.0		1490.0	1310.0	1240.0	1320.0		1410.0		
GRAIN YIELD (t/ha)	1.40	1.35		1.33	1.18	1.13	1.18		1.26	1.26	0.10
GRAIN YIELD (lb/ac)	1251	1204		1188	1054	1006	1053		1124	1126	92
GRAIN YIELD (bu/ac@ 60 lb/bu))	22	22		21	19	18	19		20	20.1	1.64
GRAIN YIELD (bu/ac from collections)			25					24		24.8	
STRAW / GRAIN RATIO	0.62	0.68	[redacted]	0.73	0.74	0.82	0.74	[redacted]	0.80	0.7	0.06
STRAW / GRAIN RATIO (from collections)										0.8	
BALE MASS (Kg) - Adjusted	386	418	487	447	396	408	411	473	455		
BALE MASS (lb) - Adjusted	850	922	1074	986	873	900	907	1044	1002		
GRAIN MASS (Kg) - Adjusted	619	623		614	539	511	544		583		
GRAIN MASS (lb) - Adjusted	1365	1373		1354	1188	1127	1199		1285		
STRAW YIELD (t/ha) - Adjusted	0.79	0.82	0.96	0.88	0.79	0.82	0.81	0.92	0.90	0.86	0.06
STRAW YIELD (t/ha) - Adjusted (from collections)			1.2					1.0		1.12	
STRAW YIELD (lb/ac)- Adjusted	709	736	856	786	703	730	723	825	799	767	57.7
GRAIN YIELD (t/ha) - Adjusted	1.28	1.23		1.21	1.07	1.03	1.07		1.15	1.15	0.09
GRAIN YIELD (t/ha) - Adjusted (from collections)			1.44					1.38		1.41	
GRAIN YIELD (lb/ac) - Adjusted	1138	1095		1080	956	915	956		1024	1041	84
STRAW / GRAIN RATIO - Adjusted	0.62	0.67	[redacted]	0.73	0.74	0.89	0.76	[redacted]	0.78	0.73	0.06
STRAW / GRAIN RATIO - Adjusted (from collections)										0.80	

FIELD TEST PLOT RESULTS

FLAX — MUENSTER - Field #3 — SEPTEMBER 2003

	1	2	3	4	5	6	7	8	9		
SWATH #											
COMBINE TYPE											
BALE TYPE	SQUARE	SQUARE		SQUARE			SQUARE		SQUARE		
BALING DATE	4-Oct	9-Oct	29-Sep	29-Sep	29-Sep	29-Sep	29-Sep	29-Sep	30-Sep		
SWATH WIDTH (m)	8.382	8.763	8.763	8.763	8.6868	8.6106	8.763	8.8392	8.763		
SWATH WIDTH (ft)	27.5	28.75	28.75	28.75	28.5	28.25	28.75	29	28.75		
SWATH LENGTH (m)	579.1	579.1	579.1	579.1	579.1	579.1	579.1	579.1	579.1		
SWATH LENGTH (ft)	1900	1900	1900	1900	1900	1900	1900	1900	1900		
AREA HARVESTED (hectares)	0.49	0.51	0.51	0.51	0.50	0.50	0.51	0.51	0.51		
AREA HARVESTED (acres)	1.2	1.3	1.3	1.3	1.2	1.2	1.3	1.3	1.3		
NUMBER OF BALES	34	39.5		45			42		39	Mean	Std Dev
STRAW MOISTURE (%)										9.8	1.3
BALE MASS (Kg)	422.0	469.0	541.0	494.0	437.0	459.0	445.0	512.0	610.0		
BALE MASS (lb)	930.4	1034.0	1192.7	1089.1	963.4	1011.9	981.1	1128.8	1124.4		
STRAW YIELD (t/ha)	0.87	0.92	1.07	0.97	0.87	0.92	0.88	1.00	1.00	0.94	0.07
STRAW YIELD (t/ha from collections)										26	
STRAW YIELD (lb/ac)	776	825	951	868	775	821	782	892	897	846	66
GRAIN MOISTURE (%)										9.2	0.21
GRAIN MASS (Kg)	680	685		676	594	562	599		640		
GRAIN MASS (lb)	1500.0	1510.0		1490.0	1310.0	1240.0	1320.0		1410.0		
GRAIN YIELD (t/ha)	1.40	1.35		1.33	1.18	1.13	1.18		1.26	1.26	0.10
GRAIN YIELD (lb/ac)	1251	1204		1188	1054	1006	1053		1124	1128	92
GRAIN YIELD (bu/ac@ 60 lb/bu))	22	22		21	19	18	19		20	20	1.64
GRAIN YIELD (bu/ac from collections)			25					24		24.0	
											0.06
BALE MASS (Kg) - Adjusted	366	416	487	447	396	408	411	473	466		
BALE MASS (lb) - Adjusted	850	922	1074	986	873	900	907	1044	1002		
GRAIN MASS (Kg) - Adjusted	619	623		614	539	511	544		583		
GRAIN MASS (lb) - Adjusted	1365	1373		1354	1188	1127	1199		1285		
STRAW YIELD (t/ha) - Adjusted	0.79	0.82	0.96	0.86	0.79	0.82	0.81	0.92	0.90		0.06
STRAW YIELD (t/ha) - Adjusted (from collections)											
STRAW YIELD (lb/ac) - Adjusted	709	735	856	786	703	730	723	825	799		57.7
GRAIN YIELD (t/ha) - Adjusted	1.28	1.23		1.21	1.07	1.03	1.07		1.15		0.09
GRAIN YIELD (t/ha) - Adjusted (from collections)			1.44					1.38			
GRAIN YIELD (lb/ac) - Adjusted	1138	1095		1080	956	915	956		1024		84
											0.06

Appendix IV

Combine/Baler Data

Straw Yield – Combine/Baler Comparison.

	Collector (t/ha)	Conv./Sq. (t/ha)	Conv./Sq. % of collections	Conv./Rd. (t/ha)	Conv./Rd. % of collections	Rotary/Sq. (t/ha)	Rotary/Sq. % of collections	Rotary/Rd. (t/ha)	Rotary/Rd. % of collections
Field #1	1.096009	1.07	97.5%	1.11	101.1%	1.11	101.6%	1.12	102.4%
Field #2	1.334912	1.07	80.1%	1.13	85.0%	1.18	88.5%	1.17	87.6%
Field #3	1.109324	0.83	75.1%	0.89	80.3%	0.85	76.9%	0.82	73.8%

(Conv. = Conventional Combine; Sq. = Square Baler; Rd. = Round Baler; Rotary = Rotary Combine)

Straw Yield – Machine Influence.

	Conv. (t/ha)	Conv. % of collections	Rotary (t/ha)	Rotary % of collections	Square (t/ha)	Square % of collections	Round (t/ha)	Round % of collections
Field #1	1.09	99.3%	1.12	102.0%	1.09	99.6%	1.11	101.7%
Field #2	1.10	82.6%	1.18	88.0%	1.13	84.3%	1.15	86.3%
Field #3	0.86	77.7%	0.84	75.3%	0.84	76.0%	0.85	77.0%

(Conv. = Conventional Combine; Sq. = Square Baler; Rd. = Round Baler; Rotary = Rotary Combine)

Time of Baling Impact on Yield.

	Same Day	Next Day	5 days	10 Days
Field #1	1.14	1.02	0.98	1.03
Field #2	1.14	1.18	1.14	1.01
Field #3	0.86	0.90	0.79	0.82